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# MONOGRAPH

ON THE

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## POTTERY AND GLASS INDUSTRIES

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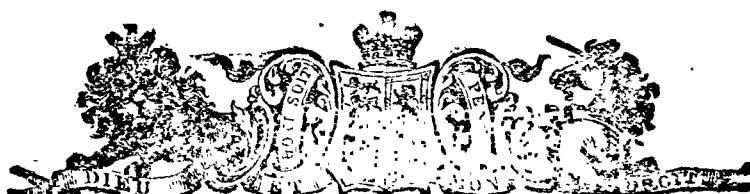
PUNJAB,

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1892.



NO. 473.

FROM

R. G. THOMSON, ESQUIRE,  
*Revenue Secretary to Government,*  
*Punjab and its Dependencies,*

To

THE JUNIOR SECRETARY TO THE  
FINANCIAL COMMISSIONER,  
PUNJAB.

*Dated Lahore, 10th August 1892.*

**Revenue and Agriculture.**

General.

SIR,

I AM directed to acknowledge the receipt of your letter No. 442, dated the 9th July 1892, submitting the Monograph on Pottery and Glass Manufacture in the Punjab by Mr. C. J. Hallifax, C. S., and to say that Mr. Hallifax has compiled a number of interesting facts with great industry and care.

2. I am to add that the Report seems to have been badly treated both by the printer and the proof corrector.

I have, &c.,  
R. G. THOMSON,

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NO. 442.

FROM

A. J. GRANT, ESQUIRE,  
*Junior Secretary to the Financial Commissioner,*  
*Punjab,*

TO

E. B. STEEDMAN, ESQUIRE,  
*Offg. Revenue Secretary to Government, Punjab.*

*Dated 9th July 1892.*

SIR,

I AM directed to submit 350 copies of a Monograph on Pottery and Glass Manufacture in the Punjab compiled by Mr. C. J. Hallifax, c. s. The Financial Commissioners' instructions were contained in Circular letters No. 534 C. S. of 23rd January 1891 and No. 3373 of 23rd May 1891, and I am to say that Mr. Elsmie thinks that Mr. Hallifax has succeeded in embodying all the information at his command in a clear and useful form on the lines suggested in those letters. By far the best of the District Reports, in the opinion of Mr. Hallifax, is that for Siálkot, which was drawn up by Mr. Greenwood, Secretary of the Municipal Committee. After that comes the report for Hissar (prepared by Sardár Charat Singh), which was good.

2. The Monograph opens with a description of the various kinds of clay found in the Punjab and of the customary admixtures of certain substances such as salt, sand and coloured earths to render the clay more suitable to the purpose for which it is required. Paragraph 14 contains a description of the two kinds of potter's wheel which alone are found in the Punjab. The *rám chak* or single wheel is the lightest and commonest, but has the disadvantage of necessitating frequent stoppages of work, as it must be re-spun with the hands whenever it begins to slow down. The *chak pakri* or double wheel is much heavier, and cannot easily be moved, but being turned by the feet it allows of better and more rapid work, and is adapted for the making of larger articles. The kilns for firing the pottery (paragraph 17) are generally very simple in construction.

Mr. Hallifax then describes (paragraphs 21 *et seq.*) the common domestic utensils and other articles of rough pottery such as huqqas, lotas, chirágs, &c., and remarks upon their shapes, sizes, uses and price. A brief mention is made in paragraph 22 of the Jhajjar pottery of Rohtak and the 'kagazi pottery.' Then paragraphs 23 *et seq.* deal with the caste, customs and prospects of the potter. The 'Kumhárs' are apparently a real caste consisting of both Hindús and Musalmáns—the former principally in the south-eastern districts, the latter on the frontier—and Mr. Hallifax estimates that only about one-third or one-fourth of the whole caste actually work as potters, and that of those who do, all or nearly all are obliged to supplement that profession with some other work during the four months of the rainy season. The potters are divided into two classes,—the town potter, who is paid by the work he turns out, and the village potter, who receives his *hag sep* calculated in various ways and by various standards. The prospects of the trade do not appear to be flourishing, as a "demand exists only for objects of utility, and fineness of work does not pay;" while in towns the native pottery is being ousted to some extent by imported china ware. There are some interesting remarks in paragraph 32 about wheel worship and the worship of 'Máta Devi' and the way in which the potter is affected by these superstitions.

3. Under the heading of Art Pottery the ware of Mooltan and Peshawar is discussed. There are said to be only five persons engaged in the latter work, and that of Mooltan is deteriorating. The number of workmen is small, and they are abandoning native patterns and the fine old blue color for bad copies of European designs and less effective browns and greens. Ordinary native ware is seldom glazed, and it seems probable that what little glazing is done will soon die out, as the profits are very low and the better classes who can afford to pay higher prices prefer to buy imported china ware.

4. The manufacture of earthenware toys (khilauna) is treated under a separate heading. Their sale is restricted to the occasions of certain Hindu festivals, and they are made by ordinary potters to meet the demands of these fairs. They are moulded either in burnt clay moulds or on a light wheel, and are of most fantastic shapes and colouring. It is worthy of notice that the import of cheap European wooden toys, chiefly German, is increasing, and may bring about a restriction of the native industry.

5. The manufacture of glass is almost confined to the making of glass bangles (churis), which are sold very cheap and are in great requisition everywhere. Paragraph 74 gives an account of some of the customs and superstitions regarding the wearing of these ornaments. Other glass articles are made very sparingly and consist of looking glasses, lamp-chimneys, bottles, glasses, scent phials, etc. It is improbable that the manufacture of glass by native methods will ever be largely extended. In the large towns the competition of cheap imported glass is strongly felt, and in smaller places the necessarily small scale of production renders the cost of making everything except churis almost prohibitive.

I have, &c.,

A. J. GRANT,

*Junior Secretary to the Financial Commissioner,*

*Punjab.*

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MONOGRAPH  
ON THE  
POTTERY AND GLASS INDUSTRIES  
OF THE  
PUNJAB.

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**1. Subject.**—The industries selected as the subject of the Monograph for 1891 are those connected with pottery and glass. They are considered under three heads, *viz.* : I, Rude Pottery; II, Glazed Pottery, Art Work and Toys; III, Glass.

The glass manufacture is practically confined to the making of "kánch chúrís," or bangles, and is limited in extent. The manufacture of toys is not a regular industry, but is carried on spasmodically to meet the irregular demands which arise chiefly during Hindu "melás." The forms of many common and unglazed vessels, such as "surábís" and "kúzás," are certainly artistic, but work which can be classified under the head of Art Pottery, as combining artistic design and colour with artistic form, exists in Mooltan and Pesháwar alone, and gives employment to a very small number of workmen. Delhi "porcelain" is also noticed under this head. The glazing of earthenware for domestic use is not often practised. Hence the most important branch of the industries under report is the manufacture of rude and unglazed vessels, being, as it is, essential to the domestic comfort of the people and of considerable importance to agriculture in supplying the customary means of irrigation.

I.—RUDE POTTERY.

**2. Clay used.**—The Punjab potter uses the simplest means and instruments in his trade. He prefers to avail himself of the materials that lie nearest to his hand without going further afield in search of what may answer his purpose better. Thus in the matter of clay, the potter uses the variety that is found in his immediate neighbourhood. The District reports enable me to give no exact description of the character and quality of the clays of the Province, except in reference to Hazára, for which District Mr. Middlemiss, of the Geological Survey, has kindly furnished the following note :—

**3. Note on Hazara clays.**—“The clays of the Hazára District may be roughly divided up as follows :—

Age.	{	1. Inferior porcelain clay and semi-decomposed felspar found in the vicinity of the granite masses in Upper Hazára.
Recent.	{	2. Light reddish-brown clay, associated with loams and sands, which go to form the alluvium of the present larger river beds.
Tertiary.	{	3. Bright red clays, associated with the soft sandstone of the "Murree beds" found along the southern border of the hills. 4. A few grey soft shales or clays.
Juranic.	{	5. The jet black "Spiti shale" of this age is found at the surface as a black clay, or may be reconverted into a black clay by mixing with water.

On the whole, the clays of Hazára are poor, unless the reported porcelain clays of Upper Hazára turn out to be better than they seem (see *Gazetteer*, Hazára, paragraph 12). Under (2) perhaps come those most useful for rough pottery, though (5) doubtless would be better if there were enough of it; (2), (3) and (4) are, however, all more or less loamy in character, owing to sandy admixture, which unfits them for finer work.” From the district report it appears that the red clays are practically recognised as the most useful.

**4. Clay generally found.**—As in Hazára, so throughout the Province, the clays found in each district are of two or three kinds, coloured in various shades of grey and red. Clay described as white or yellow is not common, and

is found only in the Deraját and Pesháwar Divisions, and in the districts of Jhang, Karnál and Sháhpur (near the Salt Range.) Pesháwar is the only district where the pottery called by Mr. Baden-Powell "the pale yellow ware of the Deraját" obtains more extensively than the red ware, for in the other districts of the Deraját and Pesháwar Divisions red or so-called black clay is used more commonly than yellow. In Karnál, the yellow clay is in general use except for cooking-pots; and Mr. Baden-Powell also notices Mooltan as a district where white pottery is made. The common name for clay is "chikni mitti," and the different varieties are roughly distinguished by their colours as kálí, lál or pilí. In the Deraját, the light red clay is called "kappar," and a clay called "gusúr" is found, which is said to be "of a brown and greenish colour."

**5. Characteristics of clay most commonly used.**—The same clay is used for rough pottery and for art work: the varieties chiefly used are the light red, and the so-called "kálí mitti," which is not black but dark grey in colour, really black clay being very rare. The light red clay absorbs little water, is light, silicious, easy to manipulate, and capable of being made very smooth, and burns to a light red colour, while the "kálí mitti" is ductile and tenacious, and burns to a dark brick red. The light clay is preferred for the manufacture of small vessels and of those made in moulds or simply turned on the wheel without further manipulation after they are "thrown" in their "green" state, *i.e.*, before they are burnt. It is easier to work, and burns a better colour than the black clay, but the latter is preferred if the vessel to be made is large and has to be worked up after leaving the wheel, and also for vessels, such as cooking-pots, which are subjected to heat and hard wear.

**6. Clay, where obtained.**—The red clay is obtained one or two feet below the surface of the ground. In sandy tracts it is occasionally dug out to the depth of four feet, and in such tracts the pits dug for the supply of brick-clay are resorted to by the potter. The black clay is as easy to obtain as the red, for it is found wherever there is a village pond or a marsh, and also in depressions in the level of the country in which water stands for any length of time. In Kángra the clay deposits, which are known as "mattiáni," are situated in alluvial hill-sides, and the banks of the Indus and other rivers and streams also yield clay—with an exception in the case of the Jumna. Spots which are known to yield clay exist in almost every village, and the potter has no difficulty in getting what he wants. He digs it up himself and uses his donkeys to transport it to his house. City potters may, like their village brethren, get their own clay, or they may buy it for about 2 annas per donkey-load (about one maund). Even in places like Ferozepore, where it is said to be somewhat difficult to obtain, good clay is got within three or four miles of the city, and can be bought for four to eight annas per cart-load, according to quality. The only exception mentioned in the reports to the rule that potters do not go outside their own districts for clay, are the small import into Kohát of red clay from the Afrídí Pass country for use in making the bottoms of cooking-pots, and the import into the same district of clay from Kalábagh in Bannu.

**7. Cost of clay.**—Clay generally costs nothing, as it is obtained from uncultivated lands which are "shámilát deh," from which the potter, as a village "kamín," is allowed to take it without payment. And even if a man goes for clay to a village in which he is not a "kamín" no charge is ordinarily made. The only districts in which payment is the rule are Karnál and Kángra, in which the "kumhár" is not always regarded as a "sepi." For clay taken from common land, the potter in Kángra has to make a special contribution to the village fund, and in Karnál he has to supply, in rotation with his fellow potters, all the vessels required by Government officials on tour. Of course if the "kumhár" prefers to go for clay to land in the possession of a "zamíndár," he has to pay for it, and the clay so obtained is sometimes so good as to make it worth his while. The price paid varies; most often all the vessels required by the owner of the land are supplied free of cost, sometimes a sum of Re. 1 or Rs. 2 in cash is paid per annum, and in Mooltan the charge is based on the area of the land dug up, Rs. 2 being paid annually for each marla.

**8. Coloured earths, "Banni," &c.**—Besides the clay of which the vessel is formed, coloured earths are the only other materials used in rude pottery work. These cannot be moulded, and they are used simply as colouring

matter. That most commonly used is red, but black and white earth is also procured in the Salt Range. The red earth is usually found in a few spots in each district, and is known as "banni," "panni" or "geru" (red ochre). This colouring matter costs the potter very little. It can be bought for 16 sérs per rupee; but usually one potter makes the journey to the spot where the earth is found, and brings back on his donkeys as much as he and his fellow potters in the neighbourhood require, and as it is very sparingly used a supply thus procured lasts a long time. The "banni" is dissolved in water, and the wash is applied with a cloth to the ware before baking. If "banni" is not available, the colour is got from "surkhí" or the powdered pieces of old crockery. In Amritsar oxide of lead is applied, and in Dera Ismail Khan an earth, called "sáwí mitti," is used, which is got from the Shíráni hills and costs Re 1 per maund.

**9. Preparation of clay.**—To prepare clay for use, it is first dried and then thoroughly pounded with a wooden pounder, called "munglí," and the powder is sifted through a sieve ("channa" or "jhanna"). The fine powder thus obtained is put aside, and the coarse clay left in the sieve is put into water and dissolved. The powder is then added to the liquid, and the whole is slightly dried and kneaded with the hands. These processes are performed more or less carefully according to the manner in which each individual works, but as a rule little care seems to be taken over them; and though two or three days may well be spent in pounding and sifting the clay, and three or four days more in kneading and "wedging" it, the whole process of pounding and kneading is often finished in six or seven hours, and the use of the sieve is sometimes dispensed with, the powdered clay being simply sifted through the fingers. The method followed in the jails is to mix water with the powdered clay, and then allow it to stand until the coarser pieces sink to the bottom, finally drawing off for use the fine clay that rises to the top and rejecting the sediment; but this plan has not been generally adopted by potters, though it is occasionally followed in preparing clay for fine ware.

**10. Admixture of sand.**—Any admixture which it is proposed to make with the clay is made during the process of kneading. Sand is everywhere added to stiff clays to render them more plastic and to diminish the risk of breakage in baking, but the proportion of sand to clay varies greatly. It is largest in Karnál, where two parts of sand are mixed with one of clay, but more commonly only one-third or one-fourth sand is added, though the mixture of as much as two-thirds the weight of clay is not rare. The admixture of course varies with the quality of the clay, and no sand at all would be required if the clay was itself light and sandy. Instead of sand a light clay is often mixed with a stiff clay to render the latter more fit to work.

**11. Admixture of salt, saltpetre or powdered bulrushes.**—Salt and saltpetre are also mixed with clay, but the object of using them is to increase the cooling qualities of vessels such as "gharás" and "suráhís" in which water is kept. But salt or saltpetre is so used in a few districts only, as in Sirsa, where the potters use salt only at the special request of their customers, and add only one part to one hundred parts of clay. In districts where this mixture is used, vessels made of it are considered superior to those made of simply clay, and fetch a higher price. Instead of salt, the Pesháwar potters add one tola of "lúkh" or powdered bulrush to each sér of clay. This use of bulrushes is noted in Stuart's Punjab Plants, p. 246, where it is stated that the down of the ripe fruit is the part that is used.

**12. Storage of prepared clay.**—After having been well kneaded and prepared, the clay requires to be put aside for a day or two in a cool, shady place in order to lose some of its superfluous moisture. For this purpose it is made up into "pinnás" or balls of about 10 sérs each, and deposited inside the potter's house. Ordinarily, only just as much clay is prepared at one time as is sufficient for the work in hand; hence no arrangements for the storage of prepared clay are usual. But if a potter is in the habit of keeping a large stock of prepared clay, which he probably does only if he has to go far to get it, he deposits it in a wide hole made in the ground, called "ghambail" or "bhora," which has a very narrow mouth, closed by a pottery cover or a piece of cloth.

**13. Potters' wheels.**—The wheel or "chák" is used in "throwing" or turning most kinds of pottery ware, though large vessels are subjected to considerable manipulation after leaving the wheel. In the case of very large articles, the "chák" is not used at all, the moulding being done entirely by hand, and in the case of "suráhís," "jhajjárs" and "chillams" the wheel is used only to finish vessels prepared in moulds.

Two descriptions of wheel are in use, *viz.*, (1) a single wheel turned by hand and supported on a pivot placed upon the surface of the ground; and (2) a double wheel, which is fitted in a hole, 2 feet 6 inches or 3 feet deep, and is turned by the action of the feet. Figures of the two kinds of wheel are given in Plate I.

The simple wheel is called "rám chák," and is that which is almost universally used in the Divisions of Delhi and Jullundur, the double wheel being found only in Delhi and the large towns, where it is used for the moulding of big vessels. The double wheel is almost exclusively used in the Pesháwar Division and Deraját. In the rest of the Punjab both wheels are found, but wherever Kashmíri potters exist, they invariably use the "rám chák."

**14. "Ram chak."**—The "rám chák" is made either of wood, stone, or clay. The latter variety is the most common, the clay being mixed with some substance (such as the hair of camels or goats, or else cotton, flax or donkey's dung) to bind and strengthen it and diminish the risk of breakage. The diameter is from  $2\frac{1}{2}$  to 3 feet and the thickness from 3 to 4 inches, and a round piece of stone (chákvati) is let into the under side to hold the axis of iron (kil or killi) or of wood (chuthi), which revolves on a pivot called "thána" or "chopat," supported on a framework of wood: otherwise the "kil" is fixed in the "thána" as in the diagram. Occasionally the wheel is strengthened by cross pieces of wood, and is enclosed in a circular wooden frame, and a slab of baked clay (thikra) or stone is sometimes found let in at the centre of the upper part to serve as a surface for working, and to prevent the clay of the wheel from damage by moisture. But the Punjabi potter cares little for these refinements, and generally works with a simple wheel which has neither frame nor slab.

Motion is imparted to the "rám chák" by means of a stick which is usually called "danda," but to which the names "soti," "chákdanda," "chalakára," "cháklai" and "chaket" are also applied in various districts. This stick fits into a notch or hole made near the circumference of the upper surface of the wheel. The hole inclines at an angle of  $45^{\circ}$  to the surface, with its mouth towards the centre, and thus the stick, which is about 3 feet long, when fixed in the hole, also inclines over the centre of the wheel. The workman imparts an initial impetus with his hands and feet, and then grasps the stick with both hands, the right being over the middle of the "chák," and the left holding the end of the stick. An action of the hand and wrist causes the wheel to revolve, and it is so well balanced that the impetus given is sufficient to keep it spinning steadily for from 5 to 10 minutes, during which time the "danda" is laid aside, and both hands are used in "throwing" the clay which has been placed ready on the wheel. The weight of the "rám chák" is from 1 to  $1\frac{1}{2}$  maunds, and it is raised 6 inches off the ground on its pivot. Its advantages are, that it can be moved as occasion requires and placed wherever the potter finds it most convenient to work, and it costs very little. A wooden "chák," which lasts for 20 years, can be got from a tarkhán for Re. 1, while the clay wheel will last 5 or 6 years, and actually costs the potter nothing. It takes three days to make, and its value may thus be put at 12 annas or under.

This wheel, however, is given to "wobble" when it begins to stop spinning, and the potter has to leave off his work to set it going again, thus losing the time which is economised by the use of the double wheel, which is turned by the feet and always spins steadily.

**15. The double wheel.**—The double wheel is called "chák lakri," and is fixed in a pit about 2 feet 6 inches, or 3 feet deep and 3 feet in diameter. It has an axis (tír or salai) which passes through a beam (phalri, parari) placed over the mouth of the pit, and turns on an iron point (sumba, tumli or chuthi) upon a block of stone (batta) or a piece of camel's bone or wood (chopat) fixed in the bottom of the pit. Attached to the axis there are two discs of wood, one

at the upper end and one near the bottom. The upper disc is that on which the clay is worked ; it is 9 or 10 inches in diameter and 2 inches thick, and is made with its centre slightly raised ; it is commonly called "topi" or "siri." The lower disc is 2 feet in diameter and 3 inches thick, and is bound round the outer edge with an iron band. It is known as "chák" or "thána," and the workman, sitting on the edge on the pit, pushes it with his foot and so sets the upper table spinning. The double wheel is generally known as "chák," but in the Deraját it is called "charkh" and "chakkar."

**16. Other instruments.**—In addition to a wheel, the following instruments are used :—

(1.) "Taga."—A string, usually called "tágá" or "dora," and also known as "chhín," "chíwan" or "kalwatri," used to separate the moulded portion of the clay from the rest of the lump on the wheel. It is drawn gently through the clay at the place where it is to be cut while the wheel is turning at full speed.

(2.)—(3). "Thatwa" and "Konera."—These instruments are represented in Plate I, Figs. 3 and 4. A large vessel when it leaves the wheel is only roughly formed, and is much thicker and smaller than it is intended to become. This rough shape, while still moist and before baking, is beaten out to the required size and thinness by the use of the "thatwa" and "konera." The former is a flat mallet of wood, about a foot long, and has one of its sides slightly concave, and the latter is a convex piece of clay or stone fitted with a handle. The "konera" is held with the left hand against the inside of a vessel to be operated on, and the concave side of the "thatwa" is used to tap the vessel over the spot where the "konera" is held. In this manner the clay is beaten out as much as required. The commonest names for these instruments are "thatwa," "thatwi," and "konera" or "koneri." But the former is also called "thapa," "thapi," "thitman" and "thola," and the latter "paindi" or "pindi," "kariru," "chappi" or "thipa." In the Deraját the common names are used, but the "thatwa" is also known as "phala," "phatki" or "chappra," and the "konera" as "dhelu" or "watta."

(4). "Arthra."—While the "thatwa" and "konera" are being used the vessel is held up in a concave rest called "arthra," "arthri" or "khopra." This is made of clay mixed with something to bind it, or else is simply the semicircular half of an old "ghara."

(5). **Scrapers.**—Iron blades or scrapers, called "chilni," are used to smooth the ware while it is on the wheel. These scrapers are occasionally shaped like small cups or "katora," and are then called "khoriyá." Scrapers of wood are also used, as well as pieces of wet cloth (parola or lír) and smooth stones (gítí).

(6). **Dies.**—"Thappás" and "sánchás" are pieces of wood on which patterns are carved, and they are used for impressing these patterns on the ware.

(7). **Moulds.**—Moulds of baked clay, used in making "suráhís," &c., are also called "sánchás." Before being used they are sprinkled with sand to prevent the clay sticking.

(8). **Brush.**—"Chatarni," "chatrín" or "qalam" is a brush used in applying "banni" or other colouring matter, and in painting lines and designs on pots.

(9). **Patris.**—"Patri," "pinawat" or "teriwat" is a slab on which clay is kneaded immediately before use.

(10). **Trena.**—"Trena" or "bhánda" is a bowl containing water or sand kept by the side of the potter as he works. The water is used to wet the hands with, and the sand to dry the hands or to add to the clay.

(11). **Pasna.**—The Amballa potters use a sort of hoop, called "pasna," with which they cut heaps of kneaded clay into thin slices in order to detect and remove stones or any other hard substances. This corresponds to what is known as "wedging."

**17. Method of manufacture.**—In proceeding to the manufacture of vessels, the potter thoroughly kneads some of his prepared clay on a "patri" and places it on "chák," after wetting the latter. The wheel is then

set in motion, and both hands are used to shape the clay by the pressure of the fingers and thumbs, the hands being continually moistened in the "trena." Small and simple vessels, such as "piálás" and "díwás," are finished on the wheel, and a large number is made from one lump of clay without stopping the revolution; each vessel is cut off when ready with the "taga." The larger vessels are worked up with the "thatwa" and "konera," sand being sprinkled inside and out to prevent sticking. A vessel is usually beaten out a little, and water is then applied to it, and it is allowed to dry for a few hours. After this, the beating out and drying process is repeated as often as necessary, sometimes as often as five or six times. When the final shape has been arrived at, all cracks are filled up with a mixture of clay and sand, and the vessel is smoothed on the wheel with the "chilni" or "gítís" and is set aside to dry a little before baking.

A coating of clay is often put over the bottom of pots to strengthen them, and a wash of "kallar," or a sprinkling of sand, salt or saltpetre, is sometimes applied to ware just before baking.

**18. Colouring and ornamentation.**—When the pottery is ready for the kiln, it is, as a rule, coloured with "banni" as described above. Circles are occasionally scratched on while the vessel is revolving on the wheel, and designs are stamped on with "thappás," or roughly scratched on with nails, and grains of sand are sometimes beaten in to form patterns. On the red "banni" the potter's women make rude paintings in black lines,—called "chittan,"—and white flowers or ornaments can be produced by the use of chalk. The black lines often have a peculiar meaning, for the "ghara" which a Hindu has to present to his "gúru" must be ornamented with them; hence in some places, as in Karnál, "gharás" so marked are used by Hindús only.

Very few vessels are coloured black, this colour being used, as a rule, for "suráhís," "huqqás" and "chillams" only. Black is obtained after the vessels have been baked, by putting camel's or goat's dung or chips of deodár wood into the kiln, and then completely stopping up every opening, so that the smoke penetrates the ware and gives it the colour.

**19. Kilns.**—Regular kilns of the kind described by Mr. Baden-Powell are only occasionally met with in places where fine pottery is made. The most common form of kiln (áwá, bhatti) is a simple hole dug in the ground near the potter's house. The material used for firing is "oplás" or "kundás" (cow-dung cakes) with straw and sweepings—wood is too expensive. The "oplás" are laid a foot or so deep on the ground and arranged so as to stand up on their edges. Vessels are put over them in layers, each layer being separated from that above it by "oplás," and small vessels are enclosed in pans which are especially kept for this purpose. The whole kiln is covered over with sweepings and straw; holes are made in this covering and fire is applied from below. The heat is regulated by opening or closing the holes in the covering, and if the flame is pale the heat is considered too slow, and too strong if the flame is greenish. The character of the kiln is such that its capacity as well as the time taken to fire it are not constant. The larger kilns hold 500 vessels and require two or three days firing, while others take 100 vessels only, which can be baked in one night. The number of times the kiln is used also varies with its capacity; thus in Ferozepore it is used twice a month, but in Bannu only four times in the year. Owing to want of care in the preparation of the clay and ware, and also to the primitive nature of the kiln, the loss in baking through, breaking and burning is very great, and is said to amount to 25 per cent. in summer, and as much as 40 per cent. in winter.

**20. Articles made.**—The articles chiefly made are those in common domestic use or those required for agricultural purposes.

**20. (1) Water-pots, "gharas," &c.**—Among the domestic vessels, those intended for the keeping and cooling of water are the most important. Of these, the largest in common use is the "mat" or "matti," the price of which ranges from 1 to 4 annas, according to size. A larger vessel than the "mat" is the "mattan," which runs up to 12 annas in price, but this is meant not so much for domestic use as for the storage of grain and the supply of water in mosques. In Kángra the "mat" is known as "matloha." This vessel is

followed in size by the "cháti" or "matka," which is occasionally called "matura"; the "cháti" is usually sold for about one anna. The "chátri" is a vessel which resembles the "cháti," but is smaller; it is sometimes larger and sometimes smaller than a "ghara," which latter costs from 3 pies to one anna, and from its convenient size is the water vessel which is in most general use. The names "mat" and "cháti" are not used in the Delhi Division, where the largest vessels, costing three or four annas, are called "jhár," and the next in size, which are about twice as large as the ordinary "ghara," are known as "gol."

The vessels named above differ not only in size, but also in shape: they are shown in Plate II, Figs. 1, 2, 3. The "ghara" has a round body with a somewhat narrow mouth; the "cháti" and "matka" are made with a body like that of a "ghara," but with a lower neck and more open mouth; and the "mat," "mattan," "jhár" and "gol" all have an elongated body and broad mouth.

A cover, called "chapni" or "chúni," is sold with "gharás," "chátis," &c., and is not separately charged for. "Gharás," which are usually made to hold from 20 to 25 sérds of water, are used by all classes,—Muhammadans, Hindús and Europeans,—and on account of their porosity are particularly suited, as water vessels, to the Punjab. Vessels larger than the "ghara" are used for water chiefly by Muhammadans, as Hindús prefer copper to earthenware for keeping large quantities of water. But Hindús as well as Muhammadans more commonly use them for keeping grain, "gur," "shera," &c., while "chátis" and "matkás" are also used for keeping milk, and in "belnás" to collect "gur" as it is pressed out. The larger vessels are considered to be the more adapted to cooling water, but, as noted above, salt is sometimes used in making the smaller ones in order to improve their cooling qualities, and vessels made of clay mixed with salt realise slightly better prices than those made of simple clay.

"Gharás" from which hot water is poured while bathing are made with a small spout, and are used by Hindús and Muhammadans. The spout is added to an ordinary "ghara" before baking, and adds nothing to its price.

The ordinary life of a "ghara" is about 6 months, but poor people sometimes preserve them with great care; and the case of a man is recorded who had a vessel that had been in use five years, and of the cooling qualities of which he was still proud, though it was black and dirty. A poor family uses only a "ghara" or two during a year, while a family in easy circumstances, if Hindu, is said to use 20 to 25 in a year, but only 7 or 8, if Muhammadan. Every family, however, uses this and other water vessels, not only for water, but also for keeping grain, &c., and the manufacture of such vessels is the most important part of the ordinary potter's work. The Jullundur report gives estimates of the value of the various vessels turned out in that district in one year, from which it appears that the total outturn is of the value of Rs. 2,31,000, of which "gharás" were made to the value of Rs. 1,13,000, "chátis" to the value of over Rs. 5,700, and "mats" over Rs. 2,400; these water vessels thus having altogether a value of more than half the total outturn of pottery in the district. Had figures been given for other districts it would probably have been seen that the case was the same throughout the Province.

The number of vessels that a man can make in a day is difficult to state accurately, because the sizes of each kind of vessel vary so greatly. It may be roughly said that 20 to 25 small "gharás" or 8 to 12 large "gharás" are a fair average, while from 7 to 10 "chátis" or 4 or 5 of the largest vessels can be made in one day, though a "mat," if very large, may take several days. All these vessels are made roughly on the wheel, and are then hammered out with the "thatwa" and "konera"; and the estimates of daily outturn refer to the number that can be made in one day from prepared clay. As a rule, potters work together, or are helped by their families; so that one man is continuously at the wheel, while others look after the clay and the kiln. If, however, the same man prepared the clay and then made the vessels and baked them, it would take him three days or more to finish the number that he could mould in one day.

**20. (2) "Surahi."**—An ordinary adjunct to the "ghara" or other water-vessel is the goglet, called "suráhí" or "jhajjar," and also known as

"kúza" or "lota," and in Kángra as "oli." This vessel, like the "ghara," is made of various sizes; its commonest form has a round body with a long narrow neck (as shown in Plate II, Fig. 4), and it is used as the decanter in which to draw water for immediate use. The body is sometimes made on the wheel and with the "thatwa" and "konera"—the neck, and occasionally the bottom also, being made separately and joined on afterwards, with a ring of clay put over the join between the neck and body to make it more secure. But, as a rule, "suráhís" are moulded. The body is made in two moulds (having "naqsh" or designs stamped on them, which appear on the "suráhí," in relief). The moulded halves join horizontally in the middle, and the neck is made separately on the wheel, and the different parts are joined together on the wheel, which is revolved while they are adjusted. Inequalities in the joints are smoothed off with the wet cloth or the stones and scrapers kept for the purpose.

This vessel is used by Hindús and Muhammadans, and occasionally by Europeans. It has a great variety of forms besides that mentioned above. Thus the "battak" has flattened sides, and is fitted with ears to allow of its being slung up by a cord on the back of a traveller. The "jhári" is another form, and is a large vessel, either round or flattened, but with a narrow, low neck into which two fingers only can be inserted, and is used for carrying water on journeys, or to places where work has to be done but water is not procurable. A variety of the "jhári" is made in Shahpur of a size which can be conveniently carried in donkey bags. One kind of "suráhí," called "phúsa," resembles an English tea-pot, and another kind has two chambers separated by a space between them; the inner chamber, in which water is kept, is thus surrounded by a perforated chamber, which is used either for ornament or because it helps in cooling the water.

As "suráhís" are generally moulded, a large number can be turned out daily, and the average outturn is 30 or more ordinary "suráhís," 15 or 16 "battaks" or 5 or 6 "jháris." The price of all varieties range from 3 pies to 1 or 2 annas, and even the more elaborate forms do not exceed the latter price.

**20. (3.) "Gilas."**—The "gilás" is generally used with the "suráhí," as the "suráhí" with the "ghara." The "gilás," more properly called "ábkhora" (or "matkána" in Delhi), is a small deep pot with a rim. It is moulded entirely on the wheel, and as it is perfectly simple large numbers are made in one day, so that the price is 1 or  $1\frac{1}{2}$  pies each—sometimes 3 pies each. Water is poured from the "suráhí" into the "ábkhora" and drunk from it; hence its use is confined entirely to Muhammadans, as Hindús are unable to use it owing to their belief that earthenware is defiled when anything has been eaten off it, or when it has been touched by the lips in drinking from it.

**20. (4) "Astawa" or "Kuza."**—Another vessel peculiar to Muhammadans is the "astáwá," "kúza," "lota," "badhna" or "wadhani," which is used for ceremonial ablutions before prayers—some are usually kept in every mosque for the use of the worshippers. It is commonly made like a long necked "suráhí" with a spout and handle (Plate II, Fig. 5); the spout is characteristic, but the handle is sometimes dispensed with. The body and neck are made like those of a "suráhí," and the spout and handle are made afterwards and joined on. As the vessel is moulded, a large number can be made in a day, and its price is generally from 3 to 6 pies.

**20. (5). Cooking-pots.**—Cooking vessels of earthen-ware are not used by Hindús of good caste, as earthen-ware is defiled if anything is cooked in it, but Muhammadans and low-caste Hindús use a cooking-pot which resembles a "cháti" (Plate II, Fig. 6). This pot is known as "hándí," and it also has the name "kúná," "kúní" or "katwi." It is made in the same way as a "ghara," and 10 large or 20 small ones can be made in one day, the price varying from 3 to 9 pies for each vessel. The large ones are also used to keep water in, and all "hándís" are used both by Hindús and Muhammadans for the storage of dry goods, such as grain, flour and spices. The "chapni" or "chúni" is used as a cover for this pot, as well as for the "ghara," and is called "mali" in Kángra.

**20. (6.) Vessels for cooking roti.**—The “tawi” or “thobi” is another cooking vessel, and is used for cooking “roti.” It is a flat plate on which the “roti” is placed and baked, and costs from 3 to 6 pies, about 15 being made in a day. In Kohát a “tandúr” is also used for cooking “roti,” and is described as a large jar, which is heated, and round the sides of which the “rotís” are placed.

**20. (7.) Plates and Dishes and Cups.**—The vessels used as plates and dishes are the “tabáq,” “tabáqrí,” “patrolí” and “rikábí”—the forms of which are shown in Plate II, Figs. 7 and 8. These are all round flat dishes with raised sides, and differ only in size. The largest is the “tabáq,” sometimes called “domri,” or “cowri,” and it is used for serving up rice or other food. The “tabáqrí,” “patrolí” and “rikábí” are all small dishes, and are used as plates. The “tabáq” is placed in the centre of the circle formed by the family or guests, and each person dips his fingers into it, and transfers a portion of its contents to his own “rikábí” for disposal. Hindús use plates only of metal or leaves (patal); hence these earthen-ware dishes are peculiarly Muhammadan. Their price varies from 1 pie for the “rikábí” to 6 pies for the “tabáq.”

A vessel called “sanak,” and corresponding to the “rikábí,” but made more like a saucer, is used by poor Hindús in place of brass “thálís,” and occasionally by rich and high-caste Hindús for acid food, which would damage metal vessels, or on the occasion of feasts, when many plates are required. The “sanak” costs  $1\frac{1}{2}$  pie, and is usually thrown away after having been used once.

Muhammadans use cups of various sizes—“piála” “piálí” (“batlí” in Bannu)—for drinking soup, milk and other liquids. These are made on the wheel in the form of a deep saucer or cup (as in Plate II, Fig. 9), the bottom being flattened after the vessel is removed from the wheel. Several hundreds can be made by one man in a day, and the larger ones are sold for 1 to 3 pies each, while the smaller ones cost only 2 annas per cent. Hindús only use them as they use the “sanak.”

Covered dishes, called “sarposh” or “dhakwán,” are used by Muhammadans for serving up “roti.” They are like a “tabáq” with a cover, which is often ornamented with stamped patterns, and cost from 1 to 3 annas each.

**20. (8.) Vessels used as receptacles for grain and other dry goods.**—The vessels in which water is kept, and more especially those of larger size, are used by both Hindús and Muhammadans as receptacles for dry goods. But vessels made especially for this purpose, and also used by all classes, are the “jhánwála,” which is like a large “cháti”; the “kulfa,” with its diminutive the “kulfí,” a semi-circular pot provided with a cover; the “taula,” which is made something like a well “tind”; and the “kulhia,” which is a very small “taula.” Five hundred “kulhiás” can be made in a day, and they cost about 2 annas per cent. only, but only 10 to 20 of the other kinds of vessels can be turned out daily, and their prices are:—“taula” 6 pies each, “jhánwála” 1 anna each, “kulfa” and “kulfí” from 6 pies to 2 annas each.

**20. (9.) “Martaban.”**—The “martabán” (Plate II, Fig. 10) is a small deep jar with an elongated body, which is used by Hindús and Muhammadans to keep pickles and acid articles. In Kángra a vessel used for similar purposes is called “jasla,” but is shallow, and has a broad mouth, and does not resemble the “martabán.” About 10 or 12 of these can be made in a day, and they sell for 3 to 6 pies each.

**20. (10.) Vessels for milk and oil, &c.**—The “dahauni” or “doháwa” (Plate II, Fig. 11) is a vessel used as a milking-pail, and also for keeping and warming milk, and Hindús use it as well as Muhammadans. Ordinary well “tinds” are also used for milking, but the vessels used to keep “ghi,” butter, milk and oil in is more usually the “dola” or “delí,” which is also known as “maghi,” or by the general name “kúza” (Plate III, Fig. 12). It holds from 2 to 5 sérs of milk, and is made with a narrow mouth, costing from 3 to 6 pies each. The “kunda” and “jamáwána” are more especially intended to keep curds in, and the camel-men in Shahpur keep their milk in a vessel known as “daura.”

**20. (11.) Vessels used by milk-sellers and "halwais."**—The "khumrú" is a small vessel made for Hindu milk-sellers, and is used by them to send out their milk to customers. The "shakora" is another vessel used for the same purpose, and also by "halwáis" for the sale of sweetmeats. It is seldom used by Muhammadans, but Hindús use it to keep milk and curds in, and at feasts it is used as a pot for curds or pickles. This and the "khumrú" are small pots of simple form, and as they are easily made on the wheel, their price is only from 1 to 4 annas per cent., according to size.

The "thuthí," which is a small plain saucer, and costs 6 pies per cent., and the "kular," another small vessel selling for 1½ pies per cent., are also used by milkmen and "halwáis" for the sale of their goods. All these vessels are, as a rule, thrown away by Hindús after use. The "kular" and "thuthí" are shown in Plate III, Figs. 13 and 14.

**20. (12.) Vessels used for kneading flour.**—The "tabáq" mentioned above is used to knead flour in, and vessels made especially for this purpose resemble it. They are called "sáhnak," "kúnál," "kunda" or "patri," and are larger than the "tabáq," being usually about 2 feet in diameter, and they cost up to 4 annas each, according to size. They are also used for washing clothes and other purposes.

**20. (13.) "Tinds" and other vessels used by Zamindars.**—Of vessels used in agriculture the "tind" or "lota" (Plate III, Fig. 15) is the most important. It is a small pot tied on to the "máhl" or rope of a Persian-wheel, by which water for irrigation is raised from the well. From 50 to 100 can be turned out on the wheel in a day, and the price is more commonly 8 annas per cent.; but in some districts it is as low as 4 annas per cent., and in Karnál as high as Re. 1 per cent. If they are bought retail they cost from 1 to 3 pies each.

"Nánds" or "Kúnds" (Plate III, Fig. 16) are large vessels used as feeding troughs for cattle, and also as receptacles for water by masons, and for dyes by dyers, and for other purposes. Being too large to work upon the wheel they are made by hand, and only 3 or 4 can be turned out in a day. "Nánds" usually cost 2 or 3 annas each.

The "dokhla" or "chuttu" is a vessel used in clearing grain from dust; it is made with a wide mouth, and costs 1 anna 6 pies or 2 annas each.

In the Deraját a square bin for corn and flour, called "grand," is made, which is especially large, and costs 8 annas apiece.

**20. (14.) Dyers' "mats," &c.**—Among the articles made by potters are vessels for use in various trades. Thus large "mats" are made for dyers, which are 4 feet high and 3 feet broad in the middle, and are intended to hold indigo. They are made especially well in Hoshiárpur, whence they are exported to the neighbouring districts. Similar "mats" are made for sugar manufacturers, and large "kunáls" are made for tanners to be used in soaking leather; the "kunáls" made by "Purbia" potters at Karnál have some local fame. All these large vessels are made by hand, and each takes 2 or 3 days to make. The price depends on the size, but averages about 8 annas.

**20. (15.) "Huqqas" and "Chillams."**—Potters also make "huqqás" or tobacco pipes and their parts in various forms. The "huqqa" commonly smoked by peasant women (shown in Plate III, Fig. 17) has the "chillam" or tobacco-holder joined on to the body of the "huqqa," which holds water: this variety costs 1 or 2 annas, and 3 or 4 can be made in a day. But the commoner "bubble-bubbles" have the "chillam" or "haweba" separate from the water-holder, which is itself called "huqqa." The latter are made in various shapes, and are sometimes plain, sometimes ornamented with stamped designs or grooves, but their price does not exceed 6 pies as a rule. The "chillams" also have various shapes, some of which, such as those made at Jhajjar in Rohtak, are highly ornamental. The commoner forms are broadly divided into "chillams" used in towns (Plate III, Fig. 18) and those used in villages (Plate III, Fig. 19), the former being better made, and having a wider mouth than the latter.

"Chillams" with covers are also made for chárás smoking, and the prices of all varieties range from 1 to 6 pies apiece.

**20. (16) Miscellaneous articles.**—Among other articles made are the following :—

"Chirág" or "díwa" (Plate III, Fig. 20), the ordinary oil lamp made to hold about 2 chittáks of oil, which is turned on the wheel, the notch for the wick being made by pressing down the edge with the fingers. They sell at 1 or 2 annas per cent., as a very large number can be made in a day.

A specially small "chirág," called "dewla," used only by Hindús for illuminations during the "Diwálí," and costing 6 pies per cent.

Clay stands for "chirág," sometimes used in place of the more common stands of wood.

The "mátra," or "chakki" which is a large shallow vessel in which grindstones are placed, and which serves to collect the flour as it is ground out. It is made by hand, and costs from 1 to 3 annas.

Mortars, called "daura," "dauri," "okhlí," or "kunda," which are made on the wheel with few pieces of stone let into the bottom to strengthen it. These are used with wooden pestles for pounding medicines, condiments, &c.

"Dawait" or ink-pots (Plate III, Fig. 21), of which from 100 to 300 can be made in a day, and which cost 4 or 5 annas per cent.

"Kulábás" (drainage pipes), "parnálás" (roof drains), "khapra" (tiles), which are all moulded by hand.

"Gamlás," or flower-pots, selling at Re. 1-8-0 to Rs. 4 per cent.

"Pinjrás," or pierced tiles for windows or walls, and a few other miscellaneous articles, such as the "kángrí," a vessel used chiefly in the hills, and said to be of Kashmírí origin, which is filled with live charcoal and carried about under the clothes for warmth; "anárs," made for the fire-works, so called; "agardán," for holding burning incense; "chilmchís" or basins; "sil" or "sang-pair" (bathing slabs), &c.

**21. Noteable ware.**—Every district has one or two places in which the best pottery is said to be made—the especial estimation in which the local ware is held being most often the result of the excellent clay found in the neighbourhood. But the ware made at Jhajjar in Rohtak and the "kágazí" pottery made in various towns have more than a merely local celebrity.

**21. 1.) Jhajjar Pottery.**—The Jhajjar ware is not glazed or coloured (except that a sparkling white is sometimes imparted to it by the application of a mixture of kikar gum and mica (abrakh) obtained in the neighbourhood). The articles made are chiefly "suráhís" "huqqás," "chillams," &c., and they are coloured in the usual way with "banni," but the Jhajjar clay is good, and the workmen (who number 71, including women and children) are skilful, so that the ware is superior to that ordinarily made. The demand, however, is small, and it does not realise much higher prices than the ordinary pottery.

**21. (2.) "Kagazi" Pottery.**—"Kágazí" or paper pottery is remarkable for its thinness—a "suráhí" holding 2 sérs of water weighs 8 chittáks only. It is made at Pánipat in Karnál, Jhajjar in Rohtak, Sheikh Bastí in Jullundur, Tánda in Hoshiárpur, and probably in a few other places. It is mentioned by Mr. Baden-Powell as being made in Kángra, but the district report does not notice it. The clay used is the ordinary clay, but this is prepared with much greater care than usual. It is steeped in water for 2 or 3 days, and carefully drained off, and then worked up with the hands to ensure its being absolutely free from pieces of "kankar" or other hard substances. The price is only a very little higher than that of ordinary pottery.

**22. The Potter's caste.**—The maker of pottery is always a "kumhár" by caste, whether Hindu or Muhammadan. Those who are engaged chiefly in making "suráhís" and the like, or "kágazí" ware, are called "kuzagars," to

distinguish them from the "kumhár," who confines himself to making "gharás" and "tinds" and the rougher sort of ware. The report for Hissár is the only one that notices subdivisions of caste, and in that district the "kumhárs" call themselves "Tanesár Rájpúts," and are divided into the gôts of "Golu" and "Melar," and also subdivisions indicating the district of their origin, such as "Desí" and "Jodhpuría." In the Karnál report a similar subdivision is noted in the case of "Purbiás." But though he claims to be a "Rájpút," Hindús do not regard the "kumhár" as of a caste superior to those of his fellow "kamíns." According to Monier Williams his caste has a mixed origin, and results from the union of a "Brahman" with a "Kshatriya" woman, and owing to this fact, and because they occupy themselves in keeping donkeys and collecting dung and sweepings, "kumhárs" are regarded as of low caste. The Muhammadans, who must for the most part be converts from Hindúism, claim to be "Sheikhs"; among them there are a few Kashmíris, who are found chiefly in Siálkot, Gujrát and Amritsar. Muhammadan Chogattás and Bhattís occasionally are found as sellers of pottery-ware, but do not themselves work as potters.

In the Deraját and Pesháwar the industry is almost exclusively in the hands of Muhammadans, but Hindús, as well as Muhammadans, are found throughout the rest of the province, and in the south-east are the more numerous, while in Kángra the potters are nearly all Hindús.

**23. Number of Potters.**—The figures given in the reports are not sufficiently clear to afford an estimate of the number of potters in the province. In a few districts no estimate is made, and it is simply stated that potters are found in nearly every village, and when figures are given their basis varies in different districts. Thus the Amritsar report gives the number of "kumhárs" as 32,639, according to the last census, and remarks that all these do not necessarily work as potters, without making an estimate of the number of those that do. But the large proportion of those that do not so work is shown with clearness in the Hissár report. In reference to that district, Mr. Ibbetson has noted in his Census Report that the "kumhár" is very numerous, and is often a husbandman, and the district report estimates that of 21,623 Hindu and 6,077 Muhammadan "kumhárs," 1,621 only work as potters. As far as I can judge only  $\frac{1}{3}$ rd or  $\frac{1}{4}$ th of persons belonging to the "kumhár" caste are actually potters. The following figures from the reports show the amount of discrepancy:—Jhang is said to have 15,309 potters, while Lahore has only 4,765 and Delhi 2,000, and Montgomery, with more people and more villages than Jhang, is said to have 1,000 only. The total numbers for the province must be very considerable, as any but the smallest village has 2 or 3 potters.

**24. Town-potters.**—The number of town-potters, i. e., potters who sell their wares for cash only and get no "haq sepí," are returned as follows:—Gurgáo 150, Delhi 600, Hoshiárpur 414, Jullundur 1,008, Amritsar 60 families, Siálkot 340, Gujrát 4, and Dera Gházi Khan 240: these numbers including women and children. The figures probably do not give an exact estimate of the number of town-potters, but such men are found only in Sadar towns and cantonments, and exceed 500 in Delhi and Jullundur alone. In the latter case, the large number is not specially explained, and its correctness is doubtful. It probably includes men who are not altogether town-potters, but are to a certain extent "sepís" as well, and such men are found in all the large towns of the province, but cannot be strictly classed as town-potters. Therefore it appears that the number of the latter bears a very small proportion to that of village-potters.

**25. The Potter as a "sepí."**—The position of "kumhár" as "sepí" is recognised in every district except Kángra and Kohát and the Nowshera and Abbottabad tahsíls of Hazára, where the potter is not a "sepí," and vessels supplied by him are paid for in cash. In tracts where "charsás" or leather buckets are used instead of Persian-wheels for irrigation, the supply of well "tinds," one of the chief "raisons d'être" of the customary service, is not required, and in some tracts of this character, as in a part of Karnál, the "kumhár" is not a regular "kamín." In Hissár his position is somewhat anomalous, for the district report states that he is a sepí, but has no fixed

"haq," and cannot, like the "lohár" and others, claim a customary share in the harvest; but, in spite of this, he is apparently paid his share regularly.

**26. The Potters' "sep."**—It is impossible to give a general estimate of the average income which a "kumhár" derives from his "haq sep," for the basis of payment, as well as the service rendered, varies, and variations are found even in different parts of one district. The potter is indispensable as a "kamín" where Persian-wheels are used, and this method of irrigation has much influence on his prosperity. In Dera Gházi Khan, for example, the increase of well cultivation has greatly improved his position and prospects, and it appears that in Amritsar, in villages where there are no wells, the custom is growing of paying cash for household pots and "gharás," and this is being extended to villages where the canal has led to the closing of wells. But his duties as a "kamín" are also to supply the "sarái" and household with domestic vessels, and to give a new set of vessels on a marriage or death, and to supply agricultural vessels, such as those used in "gur" presses; occasionally he has also to carry his employer's grain as a portion of his service. Separate payment in grain or in cash is sometimes made for "tinds," and ordinarily for all the larger sorts of vessels.

**27. Amount of "haq sep."**—The amount of "haq sep" is determined either with reference to the number of wells supplied with "tinds" or per plough used by the "zamíndar" for whom service is done, or per house; but in some places the "kumhár" gets a fixed percentage on the total crops of his employer, or a fixed payment in kind per crop, without reference to the number of wells or ploughs used. In Dera Ismail Khan payment is made by giving the "kumhár" the produce of one "marla" of the wheat or turnip crop, and paying him Rs. 2 in addition if he supplies "tinds."

The following figures will show how much the payment varies:—

In Hissár the "haq sep" is 5 to 10 sérs grain annually per house, while in Ferozepore it is as much as  $7\frac{1}{2}$  maunds.

In Hoshiárpur only 1 "bharí" and 1 "páli" are given per plough (the "bharí" being as large a sheaf as a man can carry on his head, and containing about 12 or 14 sérs of grain, and the "páli" being a sheaf about half as large as the "bharí"), but cash or grain is paid for "tinds" or large vessels, and the "kumhár" is expected to supply only moderate sized household vessels. In Gurgáoñ the "haq" per plough rises to 1 maund per annum.

Fixed payments are made in Jullundur, where a "kumhár" who supplies "tinds" gets 5 maunds grain and a "bharí" per annum, or  $1\frac{1}{2}$  maund and a "bharí" if he does not supply "tinds," and Gujránwála where the payment is 14 "bharís" from various crops during the year.

The payments made by a proportion of the crop vary from about  $1\frac{1}{2}$  per cent. in Siálkot and Shahpur to  $2\frac{1}{4}$  per cent. in Dera Gházi Khan.

Besides the payment in grain, "gur" and cotton are also given in various quantities, and the "kumbár" has the right to collect cowdung for his kiln in the village, and he gets his clay and grazing for his donkeys free from the "shámilát" lands.

**28. Presents at marriage, &c.**—When the potter takes new vessels to a house on a marriage or other festival (on which occasions the proficiency he has acquired in kneading clay is sometimes made use of by employing him to knead the flour required), he gets some small payment in grain and a money present of from 4 annas to Rs. 3—usually a little more than the value of the goods supplied, but depending on the wealth and position of the family. A larger present is given on the marriage of a son than that which is given on a daughter's marriage.

Besides the "haq sep" a small sheaf of grain is occasionally given at the harvest when the reapers come to the end of a field, but only if the potter brings out a new "ghara" or visits the field in connection with the work.

**29. Number of houses or wells supplied by one potter.**—One family usually supplies 14 or 15 houses or works for the same number of ploughs. The number of vessels supplied per house is about 20 large and 25 small ones per annum; chiefly "gharás" and "suráhís" in the case of Hindús, and also including ábkhorás," "tabáqs," "hándís," &c., in the case of Muhammadans.

A well takes from 1,000 to 1,200 "tinds" per annum, and a family of potters can work for 3 or 4 wells and supply the sharers with household vessels.

**30. Sale of vessels to non-zamindars.**—After he has supplied those for whom he works as a "sepi," the "kumhár" can sell his spare pots to non-agriculturists, and he often contracts with them for Rs. 1 or 2 per annum. Moreover, in some large towns, as in Hoshiárpur, weekly pottery markets are held, where the country potter can afford to undersell the town workmen, thus giving a proof of latter's statement that the "haq sep" gives the village men an advantage.

**31. Donkey and Wheel worship.**—The customs of donkey and wheel worship may be noticed here as interesting, though the amount the potter gets from them is small, and they are said to be dying out. On the birth of a child, during small-pox epidemics, and in the month of Chait, women worship "Mátá Devi." The "kumhár," as the care-taker of the donkey, Mátá's favourite animal, which is worshipped, comes in for an offering of cooked rice, &c. "Banniáhs" are especially addicted to donkey worship, and it is frequently performed by them. The donkey is also worshipped at marriages; the bridegroom before the ceremonies at the bride's house has to touch it with his feet, and the "kumhár" who brings the animal is fed and gets some money.

Wheel worship is performed both before and after a marriage by the bride's female relatives, and is either "Krishna" worship (the wheel being an emblem of that god), or else it represent the worship of "Brahma Prajápati," the wheel being the symbol of reproduction.

**32. Grave-digging.**—Muhammadans pay "kumhárs" a few annas on the occasion of a burial for digging the grave, and a little cloth is given besides.

**33. Co-operation.**—There are no large factories in the province, but "kumhárs" seldom work singly. As a rule, at least two or three work together—the carrying, preparing and moulding of the clay and the superintendence of the baking being divided among the co-workers. Moreover, though the wife of a potter and his children under 15 are able to give no assistance in moulding pots, they help in getting and preparing clay, and in filling and tending the kiln, and the potter at his wheel is attended on by members of his family who bring him water, clay, &c., as required. The colouring of vessels with "geri" and ornamenting them with black lines is peculiarly the work of the potter's wife, and she also helps in carrying the ware out for sale and in selling earth in the towns, while the children look after the donkeys while they are grazing.

**34. Other occupation usually followed by Potters.**—Pottery work is at a standstill during the rains, because clay cannot then be properly dried and prepared, and baking is impossible with the unprotected oven. Thus the potter, to live entirely by his trade, must make sufficient to keep him for the year in 8 months, for the compulsory suspension during the rains lasts from mid-June to mid-October. But he barely makes enough to support himself during the working seasons, and cannot afford to be idle for 4 months, though if he has laid in a good stock of pots he can realise double the ordinary prices for them during that period. He, therefore, has some other occupation which he follows in addition to his trade, and most often he is an agriculturist and cultivates his own land, as a tenant, or he works as a labourer for others. But he turns his attention to many other occupation as well, such as making salt-petre, sewing "tat borahs," weaving, plastering, &c. Town-potters and others living near towns combine brick-making with pottery, as a good profit can be made from bricks owing to the demand due to the fact that "kacha" houses are

being replaced by "pakka." An occupation which to a great extent is peculiar to the "kumhár," and which is of importance to the business of the country, is that of a carrier, which the "kumhár" adopts the more naturally, as the necessity of carrying clay for his own work compels him to keep one or more donkeys, and as these graze on the village common and cost little to keep, the carrying trade is a considerable source of profit. The potter is the ordinary grain-carrier of the villages, and is paid for taking grain from the field to the threshing-floor (except in the few cases when this duty is included in his "sep"), and he is employed by traders and middlemen to carry grain from villages to towns and railways. The donkey is also made use of in transporting earth for sale, chiefly for building purposes—to the towns in the neighbourhood—where it sells for 1 or 2 pice per bag.

**35. Average earnings and general condition of Potters.**—The average earnings of a potter who lives entirely by his trade are estimated in the reports at from 2 to 4 annas per diem, the price realized for the ware being nearly all profit and wages, as the clay, fuel and other materials usually cost nothing. On the whole, the village potter with "haq sep" is perhaps better off than the town potter, but the latter can earn more if he is a good workman, and has sufficient opportunities for selling his goods. The average price of vessels has risen during the last few years, but the cost of living has increased proportionally, and the real profits of the potter remain unchanged.

Altogether a potter is not generally able to do more than maintain himself and his family, and he is often drowned in debt. The fact that he will abandon his trade as soon as he can obtain enough money to enable him to start another, is a proof of the smallness of his profits. Whenever a "kumhár" has made a little money he starts as a contractor, or money-lender, or devotes himself altogether to the carrying trade, and so helps to swell the numbers of those "kumhárs" who are not potters.

**36. Trade in pottery ware.**—Owing to the method in which pottery is disposed of in exchange for "haq sep" and the manufacture of ware in small quantities in every village, no estimate can be made of the total outturn per annum. There is no import or export trade in rough ware, though a little is sent from Sirsa to Patiála and Bikanir, and about Rs. 100 worth per annum goes from Dera Gházi Khan to the Biloc and Pathán tribes—being taken to complete the loads of camels carrying other merchandise.

Inter-district trade is carried on by means of fairs, and "zamíndárs" occasionally go out of their district to get articles which are considered to be made better elsewhere. Thus "suráhís," &c., made with salted clay go from Kohát to Pesháwar and the Cis-Indus districts; the Ferozepore people go to Lahore to get goods, which they think better than their district goods; the Pesháwar ware is preferred in those districts to that made in Bannu and Hazára; and Dera Ismail Khan imports from Mooltan. But this trade is inconsiderable, and the price at which local made pottery is sold is so low as not to admit any profit on imported goods, which would not realise more than the local price, because, for all practical purposes, rough ware is made as well in one place as in another.

The finer goods are sometimes exported. Thus Rs. 50 worth of the Jhajjar ware goes annually to Delhi (but the ware is not said to be made in sufficient quantities to render export profitable), and the "kágazí" pottery is sent away for sale from the place of manufacture, as the local demand is very small.

**37. General condition and prospect of industry.**—The case of this latter ware and the Jhajjar ware, which are both superior to the ordinary pottery, show that the demand exists only for objects of simple utility, and that fineness of work does not pay. The demand for rough ware will never fail, as the pottery made is peculiarly adapted to the demand, but this demand is limited by the prejudices of Hindús, who believe that gold is purified by air, and silver and other metals by water, but that earthen-ware when once put to any use that requires purification is rendered useless, for the taint cannot be

eradicated from it. Hence they do not generally use pottery for eating and drinking from, though in some places, as in Ferozepore, Hindú Jats make use of it, and the poverty of the lowest and poorest castes of Hindús compels them to resort to it in place of the more orthodox brass and "kansi." But there is no objection to Hindús keeping grain, oil, &c., in earthen vessels, though for these purposes (among Hindús and Muhammadans as well) the common tin cannister in which oil is imported is coming into greater favour, to the prejudice of pottery. Moreover, among Muhammadans, the demand for unglazed pottery is decreasing, because whenever they can afford to do so they throw it over for metal vessels and imported China goods, which are at once more strong and more serviceable, and against which the "kumhár" cannot compete with his methods of working and the means at his disposal. The extent to which China is ousting pottery—chiefly unglazed ware, for little glazed ware is locally made—appears from the fact that last year Rs. 10,300 worth was imported into Lahore.

The potter strictly follows tradition, and apparently not a single new pattern or vessel has been introduced. Something may perhaps be done by teaching better methods of preparing clay and baking, thus saving the present large loss in the kiln; but the "kumhár" has not shown himself eager to adopt the improved method followed in jails, and the primitive nature of his tools, as well as his poverty, render it unlikely that the character of the common ware will be changed or improved; for there is no demand for better ware, and the industry will continue to be carried on in the future as it has been in the past, though a slight decrease in the amount of pottery made may be anticipated from the increase in the use of metal and imported China.

## II.—ART POTTERY, GLAZING AND THE MANUFACTURE OF TOYS.

### A.—ART POTTERY.

**38. Centres of Art Pottery.**—A trade in art pottery exists only in Mooltan and Peshawar. Attempts have been made to introduce "káshigari" into Amritsar by inducing workmen from Mooltan and Sind to settle there, but they have failed. The introduction of a sort of porcelain manufacture into Delhi has, however, been more successful, and Delhi is now noted for its white pottery. Vessels are occasionally glazed and coloured elsewhere than at Mooltan and Peshawar, but there is no regular manufacture as in those towns. A few potters, such as Muhammad Sharíf of Jullundur, are still able to make first class painted and glazed tiles, but the manufacture of tiles, which was once so extensive, has practically died out in the Punjab, and it is stated that even when tiles required for mosques and buildings can be prepared locally, the orders for them are not given to the local workmen. The obstacles in the way of art pottery are the lack of enterprise displayed by the workmen, the jealousy with which they guard their secrets in order to prevent competition, and the readiness they display to abandon old forms and methods suited to native work in order to adopt cheaper and less effective materials, such as dies, or English patterns that are unsuitable.

**39. Mooltan Pottery**—The Mooltan art pottery is known as "káshigari"; the makers are called "Káshigars," and are a distinct class by themselves. Mr. Kipling, in a note printed in the Mooltan Gazetteer, states that the Mooltan work had the same origin as that of Sind, but differs from it technically. Originally it was confined to the manufacture of tiles, slabs, &c., painted with text and other designs, and intended to be built into mosques, tombs and other buildings. But the native demand for this kind of work has died out, and a European demand has arisen which has entirely changed the character of the articles made, and "has developed a trade in flower-pots, large plateaux for decorative purposes, and many varieties of the comprehensive word vase."

**39. (1). Manufacture and colours used.**—The clay used is the same as that described as in use for rough ware, and the "Káshigar" does not himself make the goods he decorates. He buys from ordinary potters unbaked vessels made of good clay, well prepared, and then smooths the surface and fills in all

cracks and holes with sand. As the clay used is white, there is no necessity to coat the ware with chalk and gum as is done in Peshawar and in Sind, and a coating of glaze made of "sufeda" (carb. of lead) 1 sér, "kánch" 1 sér, and  $\frac{1}{3}$  sér of gum, mixed in water is applied to the vessel, and flowers and designs are traced upon this. For this purpose artists (naqásh) are employed at 10 annas per day. The groundwork and designs are then coloured, light and dark blue and green being the colours most commonly used. The blue is obtained by applying "lájward" (*Lapis lazuli*) mixed with water, the mixture being thick for dark blue, and thin for light. Green is obtained from copper filings calcined as described by Mr. Baden-Powell. The "lájward" and copper oxide assume the required colours on baking, and after their application the pottery is covered with a glaze of "kánch" and gum, and dried, and then baked in a regular kiln with "jhānd" (*Prosopis spicigera*) wood, which gives little smoke, care being taken to arrange the pottery so that the glaze shall not be damaged. A colour of recent introduction is brown, and for this the pottery requires two bakings. There is one baking before the glaze is applied, and one for the glaze, which consists of 1 part of "murda sang" (oxide of lead), 1 part of "qalai" (amalgam of tin and mercury) and 16 parts of lead.

The colours used can only be applied together within certain limits. Thus on a white ground designs can be brought out in light or dark blue, or green; white designs on a blue ground can be obtained by painting with "lájward," all except the part to be left white; and dark blue on light blue, or *vice versa*, is obtained by applying "lájward" more thickly on the designs or on the rest of the pottery. On a brown ground designs in purple are obtained by using "anjaní" (an oxide of manganese), and designs in green by mixing copper oxide with the "anjaní." The brown colour cannot be produced on a ground of another colour.

The materials used are sold in the bázár at the following prices per sér:— "sufeda" Re. 1, "kánch" 4 annas, "lájward" Rs. 10, copper filings Re. 1, "murda sang" 5 annas, "qalai" Rs. 1-10, lead 5 annas.

**39. (2.) Price.**—The prices of the articles made depend on their size. A piece of work 6 inches high costs 3 or 4 annas, 9 inches high 6 annas, 12 inches 8 annas, and so on, up to 3 feet high, for which the price is Rs. 3-8. Pierced pottery is sold for higher rates, the price being 1 anna per inch, except for the larger sizes, such as 14 inches high, which costs Rs. 1-8.

**39. (3.) Number of workmen and condition of industry.**—There are only 5 shops of "káshigars," employing 15 workmen. Their profit is said to be 25 per cent. of the selling price of their wares, and average 8 to 10 annas per day, each shop selling about Rs. 600 or 700 worth of goods in the year. The demand is entirely European, and the goods are all exported. The demand, however, is decreasing, and the work is deteriorating in quality, as the newly introduced browns and greens are not so effective as the original blues, and deprive the work of its distinctive characteristics. European forms are also being copied, and badly copied, and a good deal of the ware made is on too small a scale to admit of its being effective, for the work is too rough to bear a close inspection, and loses its effect by attempts at minute execution. The "káshigars" are themselves very jealous of their secrets, and keep the trade in their own hands, and their industry is not therefore likely to spread.

**40. Peshawar Pottery.**—Mr. Kipling remarks that the manufacture of glazed pottery in Peshawar for the native table is of ancient date, and may be considered peculiar to the district; for although European pottery is finding its way into Muhammadan households in many parts of India, there is nowhere else a local manufacture of glazed ware for eating and drinking from.

**40. (1.) Manufacture and colours used.**—Ordinary clay vessels are used as in Mooltan, but in Peshawar the pottery is covered with a "slip" or coating of "kharia mittí" (chalk) and gum (prepared as described in "Punjab Manufactures," II, 225) in order to avoid the red colour to which the clay naturally burns. Red is obtained on this white ground by applying a soft red chalk, and black from a soft black stone, both obtained from the

Khyber Hills. Blue is got from "lájward," and green by mixing copper dust with the glaze. The basis of the glaze used is lead, and the vessels are carefully burned in a kiln fired with wood.

Chalk costs 5 annas per sér, the red and black earth costs 12 annas and Rs. 2 each ; copper filings can be got from a copper-smith for 12 annas per sér, and lead is said to cost Rs. 2 per sér in Peshawar.

**40. (2.) Prices and profit.**—The articles made are pierced desert plates, "suráhís," brackets, vases, &c., and their prices are from 2 to 5 annas each. Thus a "jangla" (flower-pot frame) or plate costs 5 annas, a vase from 2 to 4 annas, a tea-cup and saucer 1 anna, and so forth. The profits average from 20 to 25 per cent. on these prices, and workmen get their food, and from 6 to 8 annas per diem ; experts may at times obtain as much as Re. 1.

**40. (3.) Number of workmen and condition of industry.**—There are 5 makers of glazed pottery, of whom the most important is Shams-ud-dín. "When he is on his mettle he can turn out very good pottery, excellent in shape, colour and glaze, but more often he prefers inferior workmanship, and often his shop does not contain a single pleasing article." The district report says :—"The Peshawar pottery is noted for its colouring rather than for form or design. When properly applied the copper greens and rich mineral colours combined with the thick clear glaze produce a distinct effect, which, though characteristic, might be considered rather *bizarre* than beautiful. There is a great tendency to subordinate form to relief ornamentation, and that of an inferior and debased kind copied from cheap European ware. Very few of the tiles now made are free from grave faults, but some blue and white made about 20 years ago, and used in the ornamentation of a 'musjid' in the city, show what good work might be turned out in Peshawar under proper guidance. It is impossible to give any idea of the amount of art pottery actually sold here, but there is no doubt but that the greater care taken in other cities in India in weeding out bad forms has caused a falling off in the demand for Peshawar ware." Mr. Kipling also notices that the workmen are turning their attention to jugs, tea-pots, &c., of European form, but he remarks that the local clay is not strong enough to allow any but thick and unsatisfactory copies to be made. He says :—"It is certainly not by attempting to copy delicate English modern ware that any improvement can be brought about. The materials are only capable of large and simple treatment. The present potters are incapable of good oriental patterns, and their scheme of colour is limited. With the co-operation of a good pattern draughtsman or 'naqásh,' who would paint the large and flowing arabesques for which the colours are suitable, and the addition of the easily acquired dark and light blue of Mooltan, the manufacture might be greatly advanced along its own natural lines."

**41. Delhi Pottery.**—The writer of the Delhi report was probably ignorant of the fact that that district contains a noticeable variety of art pottery in the white "porcelain" work which is now established there. He incidentally notices the fact that powdered "burbura" (disintegrated felspathic rock) mixed with "gond" (gum) is moulded into dishes, vases, &c., and goes under the name of "kám chini." But this is noted in "Punjab Manufactures," II, 227, and the district report has not attempted to supplement that note by giving particulars as to the outturn, number of workmen and present style of work. From Mr. Kipling's contribution to the Delhi Gazetteer it appears that though "burbura" has long been used in the manufacture of "martabáns," "dawáts," &c., it has only come into general notice during the last 20 years. The ware was exhibited in the London Exhibition of 1870, "when its fine texture of glaze, a rough duck-egg like coating, was admired by connoisseurs." Since the European demand arose new forms have been introduced, but "lack of enterprize and ignorance of the possibilities of the art have prevented it from being largely developed. The workmen have been dragged into notice with apparent reluctance, and do not cordially accept opportunities of making money. The ware, from the fact of the 'paste' being an artificial one, i. e., compounded of powdered stone and gum, and not a natural clay, has to be made in moulds and cannot be freely handled and made in great variety of form on the wheel. It

is curious that so little has been done to improve the paste, as true China clay is found not far from Delhi, and is used habitually by the gold and silver-smiths for their crucibles." But this kaolin is not used by the Delhi potters, who are ordinary Hindu "kumhárs," for "the Delhi pottery in slackly burnt samples is almost pure sand, and can be rubbed into holes with the finger nail where the glaze does not hold it together. A mixture of the kaolin with the pounded stone ought to result, if it were sufficiently fired, in a good porcelain. As it is, in some of the best pieces the 'body' is semi-translucent. Blue and a pale green are the colours used for decoration. The patterns are poor in design, and though the general air of the product is delicate and pretty it has a somewhat sickly quality, happily described by a connoisseur as 'anæmic,' when compared with the fullness of colours and richness of pattern of Mooltan ware."

It may be remarked that kaolin is also found in the Himalayás, there being considerable deposits—for instance, in the Mandi State, which has been tested and found fit for pottery work. But there is no demand for pottery in the neighbourhood, and this kaolin could only be worked for export. A factory on a fairly large scale would have to be started, and it is not probably worth while to spend money on such an undertaking.

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#### B.—GLAZING.

**42. Glazing districts in which the industry exists, and number of workmen.**—The bulk of the pottery made is water vessels, and these require no glazing. Domestic vessels are seldom glazed, and, as a rule, no glazing is ever done except in the case of "mártabáns," "rikábís," "piyálás," "chillams," "díwás," ink-pots and "huqqás." Only 9 districts have any manufacture of glazed articles, and in each district the manufacture is represented by only one or two men as the following list shows:—

*Karnál*.—Has 2 men at Pánipat who can glaze and colour, and a few men who do a very rough kind of glazing.

*Jullundur*.—One man, Muhammad Sharíf, can glaze in colours.

*Gurdíspur*.—Three men at Batála use a dark brown glaze for ink-pots, &c.

*Siálkot*.—Four Kashmíris turn out coloured and glazed ware.

*Gujrát*.—One man, Umra, glazes in white, red or green colours.

*Gujránwála*.—Three makers of glazed and coloured ware.

*Ráwalpindi*.—Ornamental tiles and flower-pots and other ware is glazed and coloured: said to be 40 men in 23 shops.

*Dera Ismail Khan*.—Three men from Mooltan started glazing during the year.

*Hoshiárpur*.—One man at Tánda colours and glazes.

There is also a man in Dera Gházi Khan who can glaze, but he has given it up, because he says he has had glazed ware on his hands for 3 years, and is still unable to dispose of it. Some of those who know how to glaze are extremely jealous of their secrets, as, for instance, the Mooltanís at Dera Ismail Khan, who work with locked doors, and allow no one to enter till they have concealed the materials used. There was a man in Ferozepore who knew how to glaze, but he died last year without imparting his secret even to his brother, who lived next door to him, and glazing in Ferozepore has died out with him.

**43. Glaze used.**—The ware glazed is the common ware described under "Rude Pottery," and from the information given it appears that the ordinary glaze is simply "kánch," and that the lead glaze described in "Punjab Manufactures" is used only in Siálkot and Gujránwála, and in the Jails where glazed goods are made. The Hoshiárpur glaze is turpentine and mustard oil, and "ganda biroza" (resin of *Pinus longifolia*), and oil is used in Gujránwála and Karnál, while the rough glazing mentioned in the Karnál report is produced (simply by rubbing on mustard oil with a piece of cotton wool, and rebaking the ware. The insides of vessels are coated in Pánipat with "chapra" (shell lac.)

**44. Colours.**—English colours and aniline dyes bought in the bázár are largely used, but colours are also obtained as under :—

*White.*—From chalk and gum—the glaze being applied over this. Chalk sells for 16 sérs per rupee.

*Black.*—Ink is used, or the ware is blackened in the kiln as described under “Rude Pottery.” “Rasaut” (the juice of the Indian barberry) is used in Hoshiarpur, and “kájal” (laump-black) in Pánipat. In Gujránwála 8 parts of lead with 1 part of tin are reduced to ashes, and  $2\frac{1}{2}$  parts of a crystal (“bilour”) are added as a powder: with each sér of this mixture  $\frac{1}{2}$  sér “anjáni” (oxide of manganese) is mixed, and the whole is melted: after cooling it is reduced to a powder and applied to the vessel in a paste of “maida” and gum.

*Red.*—“Banni” is commonly used. “Sandúr” (oxide of lead) is occasionally applied, and in Gujrát the colour is obtained from “lohe ka mail.”

*Yellow.*—Obtained by use of “hartál” (sulphuret of arsenic) which can be bought for 8 annas per sér. In Gujránwála 1 chitták tin and 1 sér lead are reduced to ashes and mixed with  $1\frac{1}{2}$  sér powdered “bilour”: this is melted, cooled and powdered before application.

*Sharbatí.*—(Orange or pale yellow) is got in Karnál and Gujrát by applying “hiranji,” a coloured earth.

*Green.*—Obtained from oxide of copper or verdigris (zángár, támbe ka mail).

*Vermilion.*—From “shingraf” (red sulphuret of mercury), which sells for 10 tolás per rupee.

*Blue.*—From “anjáni” (selling at 4 sérs per rupee) and “shingraf,” mixed in equal parts.

*Brown.*—Is obtained in Gujránwála by the mixture of “kánch” and flour with gum, and in Gurdáspur from “kánch” and borax.

A mixture of lead, “kánch” and borax is used by one man in Pánipat to obtain “a shining gold or silver colour.”

**45. Method of applying colours and glazes.**—Gum is generally used with the colouring matter, though it is sometimes replaced by “máyá”—water in which rice, wheat or quince seeds have been boiled. Some colours are applied mixed with the “kánch,” in which case the vessel is baked at once: others are applied separately, and the “kánch” is then coated over the colour before baking. In all cases only one baking is required, the ware not being baked before glazing as in England. In baking a regular kiln is required, and care has to be taken to place the ware so that it does not stick together. “Oplás” cannot be used, and the firing must be done with wood.

**46. Trade in glazed ware and condition of industry.**—Owing to the small local demand glazed ware is exported from the places where it is made. But glazing is usually practised by ordinary potters in addition to their usual work, and the total outturn and the amount exported is small. Prices range from 3 to 6 pies for a “díwa” to 1 or 2 rupees for a flower-pot. The profits appear to be little higher than those of rough pottery, though in Gujránwála they are as high as 10 annas per diem. On account of the very small native demand for glazed ware (roganí bartan), the man who has started in Dera Ismail Khan is said to have made no profit as yet, and any one who started elsewhere would probably have a similar experience. If the well-to-do natives require something better than the common unglazed pottery, they do not go to the local makers for glazed ware, but buy imported china. Hence glazing is not an industry that will increase in extent: it is more likely to die out, except in so far as it is kept alive by the supply to the Commissariat Department of cheap “gamlás” and the like.

#### JAIL POTTERY.

**47. Jail Pottery.**—Pottery is made in a very few jails, and jails, as a rule, simply supply their own requirements in glazed and unglazed vessels. Lahore supplies other jails besides itself, and the Commissariat Department at Mián Mír was formerly supplied with pottery by it, but since 1882 has obtained its requirements from a potter at Jullundur.

Two men usually work together, and they are said to make in one day 7 "suráhís," 20 "gharás," 100 "tinds" or 700 "piálás." About 50 per cent. of the selling price of the ware is reckoned as profit at Lahore and Ferozepore. The work is more carefully done than by the common potters, and the process followed in glazing, &c., are those collected by Abdul Ghafur in a Manual for jail use. The materials used for glazing and colouring differ in many cases from those in ordinary use, but I have not noticed them in detail, as this report deals only with the methods actually followed by the potters of the Province.

### C.—THE MANUFACTURE OF TOYS.

**48. Manufacture of toys.**—The number of toy-makers (khilauna banánewale) is greater than that of persons employed in the manufacture of Art and glazed pottery, but toy-making is not a regular trade followed by any person as his sole means of subsistence. The sale of toys is chiefly carried on during Hindú "melás," and the maker prepares at a time only as many as he thinks will suffice to meet the demand at the fair at which they are to be sold. When a fair is approaching he and all his family set to work, the women and children helping in kneading the clay, filling the moulds, arranging the oven, and so forth, but when the fair is over the toy-maker returns to his regular employment, which is most often that of an ordinary potter. Toys are usually made in the figures of gods, men and animals, and the manufacture is therefore entirely in the hands of Hindús, for the Muhammadan is forbidden by his religion to make images.

**49. Number of toy-makers and places where the industry exists.**—The number of toy-makers and the places where they work are as under:—

*Ambala*.—195.

*Hissár*.—2 at Bhiwáni and 2 at Hánsei.

*Rohták*.—1 at Jhajjar and 1 at Sohána.

*Gurgáoon*.—4 at Rewári.

*Delhi*.—25.

*Karnál*.—6 families at Karnál, 15 families at Pánipat, and 1 family at Kaithal.

*Hoshiúrpur*.—10 at the Sadar, 5 in Anandpur, 3 in Dasúya and 2 in Tánda.

*Jullundur*.—24.

*Ludhiána*.—58 persons (including women and children) in Ludhiána, Jagráon and Machiwára.

*Mooltan*.—20 in the Sadar, and a few makers in the villages, who do not glaze or colour their toys.

*Lahore*.—300.

*Amritsar*.—About 25 families.

*Gurdáspur*.—Toys are made at Batála and Kalanaur.

*Siálkot*.—15.

*Gujránwála*.—6.

*Rávalpindi*.—1.

Toys are also made in Ferozepore and Muzaffargarh: in Dera Ismail Khan they are not made, but bought without ornamentation and coloured and glazed. The number of toy-makers is thus between 500 and 600, of whom 300 carry on their business at Lahore and 195 in Ambala. These are all Hindús, but particulars as to castes are only given in the Siálkot report, which states that the toy-makers in that district are all Khattrí. The name "Kúzagár," which is applied to the maker of the better sorts of pottery, is also used to denote toy-makers.

**50. Clay used and method of manufacture.**—The clay used is of the common varieties (the more tenacious kinds being preferred), but it is not made so soft as for pottery work.

Toys are made on the wheel, by hand or in clay moulds. The wheel used is sometimes a little lighter than the ordinary pottery wheel, and it is used to shape the round bodies of figures representing animals and men, or for turning out round toys such as those which resemble melons and other fruit. Heads and necks are made in clay moulds, which are made and baked by the potters themselves, and legs and arms are roughly shaped by hand and joined on to the trunk. Moulds are at times used for the whole toy, but most commonly for such parts only as can be detached from them without risk of breaking.

After joining together the two halves of a moulded toy, or the various pieces of a toy made in parts, an instrument called a "khurda" or "cholna"—such as is used in ordinary pottery work—is used to scrape away any inequalities in the joins, and to make the surface smooth. The toys are then smoothed with water, dried for 24 hours, and baked for a day or two preparatory to colouring and glazing. The oven is a hole in the ground, and a heap of alternate layers of toys and "oplás" is raised 2 or 3 feet high. The whole is domed over with mud-plaster, and a hole is left down the centre for the application of the fire. If damaged during or after baking, the pieces of a toy are stuck together again with baked clay, powdered and mixed with gum, and the toy is then coated with chalk and gum or water. When this is dry, the pattern to represent the clothes, beard, &c., is roughly traced, and colours, ground and mixed with water or gum, are applied with a brush of squirrel's or camel's hair, or with a feather. The methods in which the various colours are obtained have been described under glazing. Dyes and colours bought in the bazar are, however, most commonly used.

**51. Glaze used for toys.**—When the painting is complete glaze is applied over it. Where pottery is glazed, toys are glazed in the same way as the pottery, but the most common glaze for toys is a mixture of about 4 chittáks of "ganda biroza" (resin of *Pinus longifolia*) with 1 tola of mustard oil or some other oil. But chalk mixed with oil or gum, or with oil and turpentine, is also used, and occasionally a "kánch" glaze is applied. The cheapest glaze is that composed of "ganda biroza" and oil—each of which sell for about 4 annas per sér—and hence it is the most common. After re-baking the toys for the glaze, they are ready for sale, though further decoration can be effected by sticking on bits of artificial gold leaf ("warq chándí") to represent the trappings of horses, turbans, &c.

**52. Price of toys and profit.**—The price of the simpler toys depends on their size—3, 6 and 9 pies apiece being given for small, medium and large figures, but the amount of elaboration in their ornamentation causes the price of the best toys to rise to 1 or 2 rupees apiece. The makers sometimes sell toys to dealers for Re. 1 per cent.

A man can make 25 to 30 large, and 40 to 50 small toys in a day, his profit being  $\frac{3}{5}$  or  $\frac{2}{3}$  of their selling value. In Lahore the profits are said to be 4 annas per diem, but in other districts the average is higher, and is 6 or 8 annas per diem, though as the work is only carried on from time to time to meet temporary demands, as much as 12 or 13 annas are sometimes made per diem during the time spent in toy-making. The toy-trade at Lahore is probably a regular one,—as is indicated by the larger number of men employed,—and regularity of employment would account for the comparatively low rate of profit.

**53. Trade in toys.**—Judging from the figures given in a few district reports the expenditure on toys is fairly considerable. Thus in Jullundur toys to the value of Rs. 600 are locally made and sold in the year, and Rs. 200 worth are imported from Lahore and Delhi; in Ráwalpindi 6,000 toys, valued at Rs. 350, were made last year, and in Ludhiána Rs. 100 worth were sold; Lahore with its large number of workmen probably exports toys to other districts (no information is given on this point in the report); but as the industry is spasmodically carried on to meet temporary local demands there is no export from other districts. No trade with places outside the Punjab is reported.

**54. Character of toys made and condition of the industry.**—The toys made are extremely rough; it is with difficulty that one perceives what each is meant to represent, and both form and colour are very inartistic; a few

figures are shown in Plate IV. Efforts are being made in Amritsar to educate the taste of the public by the distribution of good plaster casts, but an invitation to the toy-makers to attend the Normal School met with no response. The toy-makers said they would come if assured of larger profits than at present, and had no doubt correctly gauged the popular taste for cheap and gaudy articles in preference to those which exhibit greater artistic beauty at a higher price. Europeans have not influenced the fashion in toys, except by furnishing models for the grotesque figures that abound of Sáhibs and Memsaibhs, soldiers, policemen, and the like, and the terra-cotta figures made at Ambala by an old man named Husainí are copies, made in moulds, of English models bought in the bazár, but he makes very few of them, and depends chiefly on his work as a potter, for he has no market for his goods. A notable use to which the skill of a toy-maker in Delhi has been turned is in making terra-cotta models of snakes, copied from the plates in "Thanatophidía" and other books which are beautifully made and coloured. The present style of toy is characteristically Indian and must remain unchanged till the "zamíndár" and other buyers of toys have acquired some of the rudiments of artistic taste. Under the conditions in which the industry is carried on it is unlikely to increase in extent, but, on the other hand, the import of cheap German and other European toys of wood and tin is said to be making its influence felt, and the native industry, small as it is at present, appears to have a still more restricted future before it.

### III.—GLASS.

**55. Glass manufacture.**—The manufacture of glass in the Punjab is divided in two branches, *viz.*, the manufacture of glass bangles called "chúris," and the manufacture of bottles, chimneys and other articles. Nearly all the glass-workers in the Province are "chúrigars," and they are found in 17 districts.

**56. Glass used, whence obtained or how made.**—The glass of which "chúris" are made is called "kánch," but its composition varies, because the materials out of which it can be made, and which can be locally obtained, are various. Glass-workers in Ambala, Siálkot, Amritsar and Lahore prefer to import their "kánch," and can get it from Delhi, Agra or Mainpuri at Rs. 2 or 2-8 per maund. In Hissár also "kánch" is not made, but old glass, "kánch" and broken "chúris" are bought up at Re. 1 per maund and re-melted for use. The commonest way of making "kánch" is that of mixing together equal parts of powdered sandstone and "sajji" (carbonate of soda, usual price Rs. 3 to 4 per maund) and melting them together. This is the method followed in Lahore, Jhelum and Pánipat (for "chúris") and also in Mooltan and Dera Gházi Khan, which both get their stone from Sakhi Sarwar: it costs Rs. 2 per maund in Mooltan. But Jhelum, like Lahore, is taking to importation from Delhi; for though both sandstone and "sajji" are obtained locally, it is found that the large amount of firewood acquired for the manufacture renders the local "kánch" more costly than the imported. In Gurgáo "reh" is mixed with saltpetre and heated for one night over a slow fire, after which it is subjected to fierce heat for a day.

Rohtak "chúrigars" use an alkaline earth found near Wazírpur and Báblí in Gurgáo, and which costs them nothing but carriage. "Kánch" is made from this by simply mixing it with water and heating it.

In a maund of the "kánch" used in Hoshiárpur there are the following materials: 3 sér of "sajji" are pounded with 2 sér of quartz and mixed with water. This mixture is made into balls (pinnás) which are heated to a red heat and then cooled and pounded.  $1\frac{1}{2}$  sér borax,  $1\frac{1}{2}$  sér saltpetre, and  $1\frac{1}{2}$  sér "kallar" is mixed to the powder thus obtained, and the whole is put into the furnace in an earthen vessel, and after 3 days' heating it forms "kánch." Borax cost Rs. 5 per maund, and saltpetre Rs. 8 per maund.

The Kángra "kánch"—which, like that of Hoshiárpur, is used for bottles, &c., besides "chúris"—is made from a mixture of lac, charcoal and "sajji," and in Pesháwar the glass, also used for bottles, &c., is made from European glass, tin, copper, zinc, "sajji" and lead.

The finer kind of glass used at Pánipat is made, as described in "Punjab Manufactures," II., 237, of red sandstone, "sajji" and saltpetre.

**57. Furnace used for glass-work.**—The method of working “kánch” and the description of furnace and tools used is uniform. The furnace (see Plate V) is “pakka” and built partially underground. It has a dome above the ground level which is pierced by 4 or 5 openings. Inside each opening a bracket or ledge of earth is built against the wall to serve as a rest for the crucible (bárá) in which the “kánch” is melted for use. Screen walls run out from the dome, so as to form a separate compartment before each opening, and each compartment is used by one workman. Before the spot where the workman sits, a stone slab, called “patri,” is fixed in the ground, and in front of this again there is a sink. As great heat is required, the furance is always fed with wood—kikar and farrásh being preferred, and costing about Re. 1 for  $2\frac{1}{2}$  maunds.

**58. Instruments used in glass-work.**—The instruments used in glass-work are described in “Punjab Manufactures,” and are represented in Plate V. They are—

1. “Ankri” or “kundi.”—An iron rod about a foot long, with a curve or hook at the end.
2. “Sinkh” or “sallákh.”—A long pointed iron rod.
3. “Mála.”—A narrow iron bar (not a spoon).
4. “Trakla,” Tarkla” or “Tirkla.”—An iron rod which has a thick butt and tapers off to a point. Called “phala” if fitted with a handle.
5. “Kálbút,” a cone of clay fixed on the end of an iron rod. The whole instrument is called “salendhi,” “sarkandi” or “sarbandi,” and the clay cone is known as “kalbút.”

An iron spoon (“kharcha” or “kharchí”), tongs and bellows are also necessary articles in a glass worker’s outfit, as well as the “nálí” or blowpipe, and “thappas” or stamps are sometimes kept for the purposes of impressing patterns on “chúris” as afterwards described.

**59. Method of making “churis.”**—To make “chúris,” the furnace is heated and a crucible filled with powdered “kánch” is placed on the ledge inside. When the workman—by testing with an iron rod—finds that the “kánch” has melted into a thick viscous liquid, he takes up enough to form add “chúri” on the hook of his “ankri.” The “kharcha” is used, if necessary, to powdered “kánch” to the crucible in place of that just extracted. The “ankri” is held in the right hand, and the “kánch” upon it is wound round the “sinkh” which the workman holds in his left hand. A thick ring is thus formed, which is slightly cooled and detached by resting the “sinkh” on the “patri” and striking it gently with the “mála.” The ring is then put on to the end of the “takla,” which is put to the furnace through the opening before the workman, and as the ring is heated it is twirled round and round on the point of the “takla,” so that it becomes thinner and larger. When the ring has opened out sufficiently, it is transferred to the “kalbút” which is rested upon the “patri” and spun round. The “takla” is used to adjust the “chúri” upon the cone, and when the hot ring has reached the required size it is slipped off the “kalbút” into the sink of water.

**60. Method of coloring “kanch.”**—“Chúris are sold either plain or ornamented, and plain “chúris” are made of various colors. The colour is obtained by using colored “kánch” or by coloring “chúris” of white “kánch” after manufacture. The imported “kánch” which is sold can be had of all colours, though green, yellow and white are preferred. When “kánch” is locally prepared, it is colored by adding lead and “qalái” to the materials used, with copper filings for green and “anjáni” for purple. The amount added to one maund, while “kánch,” for each color is as follows:—

For “Asmáni” (sky blue)	...	...	...	10 chittáks copper
„ “Uda” (purple)	...	...	...	10 „ “anjáni.”
„ “Zard” (yellow)	...	...	...	8 sérs lead, $2\frac{1}{2}$ sérs tin and 12 chittáks quartz.
„ “Sabz” (green)	...	...	...	$\frac{1}{2}$ sér copper, $2\frac{1}{2}$ sérs tin and 8 sérs lead.
„ Red	...	...	...	$\frac{1}{2}$ sér copper, $\frac{1}{2}$ sér iron filings and 4 sérs black “kánch.”

**61. Ornamentation of "churis" by "churigars"—"Chúri-gars"** as a rule simply make plain "chúris," but they also practise one method of ornamentation, which is thus described in the Siálkot report :—"The rims of "chúris" are ornamented by heating them and melting fine rods of glass and applying them. These rods are made by taking some melted "kánch" on the hook of the "ankrí," and drawing it like wire. They are made about 3 feet long and about  $\frac{1}{8}$  of an inch thick, of different colours : sometimes black and red or black and white "kánch" are drawn together and twisted so that when it is laid on the rims of the "chúris" it gives them a dotted appearance, black and red, or black and white dots alternating. These rods are called "sar," and this kind of ornamentation is done at the furnace by the workmen."

### 62. Cost of manufacture of "churis," profit and wages.

—A workman can make an average of 400 large or 600 small "chúris" in a day, though if he be expert he may make as many as 1,000 large and 1,500 small ones. Twenty sérés of "kánch" give from 4,000 to 5,000 "chúris" and require about 2 maunds of fuel, and though with the different methods of making "kánch" the cost of manufacture varies, it is on an average from 4 to 8 annas per 1,000 "chúris." The wholesale price realised by the "chúrigars" is from 8 to 12 annas per 1,000 and a workman's profit may thus be reckoned as 2 annas per diem or more, in proportion as he is more skilful. The district reports give estimate at from 2 annas to 8 annas per diem.

In factories in large towns, master workmen employ journeymen, but only two reports give particulars of the average wages. In Mooltan, where the master's profits are estimated at from 5 to 12 annas per diem it is said that journeymen get 2 to 4 annas per 100 "chúris," but as the daily average outturn there is stated to be from 400 to 600 per man, this would amount to a wage of from 8 annas to Re. 1.8 per diem and as the price of "chúris" is only 6 to 8 annas per 1,000 this must be a mistake. The Siálkot report—a very careful one—states that a hired workman is provided with a house, materials and tools, and gets  $\frac{1}{3}$  of the value of the "chúris" he makes, so that a good workman if he makes 1,000 to 1,500 "chúris" selling at 9 annas, can earn 3 annas per day.

**63. Numbers of "churigars" and places where the industry is carried on**—The accompanying table gives particulars, according to the district reports, of the number of "chúrigars" and the localities in which the industry is carried on :—

No.	District.	Number of factories.	Number of churigars.	REMARKS.
1	Hissár.	...	..	Manufacture limited—no particulars as to numbers.
2	Rohtak	2	30	Factories at Dawalah and Rankandah—90 persons are supported by these works.
3	Gurgáon	2	40	The two factories are at Sohna and employ 10 men each. The other glass workers are distributed over 4 or 5 villages.
4	Delhi	...	...	No statistics given. The report refers to the glass industry, thus "Looking-glass making is fully described in Mr. Baden-Powell's Manual, page 239, and there is no necessity of repeating here. No more information can be furnished here." But "chúris" are said to be made in Delhi, and are certainly sold in large quantities, and they are also exported to other districts.
5	Karnál	...	...	In addition to other glass-work at Pánipat "chúris" are made—no statistics given.
6	Ambálla	...	...	The report says there are 256 Musalmán and 91 Hindu Maníárs in the district, but also says that very little glass-work is done. The figures given are very doubtful.
7	Kángra	15	50	"Chúrigars" also make bottles, glasses and "chorpánis"; work a Sujánpur, Nádaun and Mair in Hamírpur tahsíl and some places in Núrpur tahsíl.
8	Hoshiárpur	...	...	Best work at Dasúya, where cups, glasses &c., are made, of coloured "kánch"; glass-work in seven villages altogether.
9	Mooltan	8	58	.....
10	Lahore	8	61	Figures given for "chúrigars" alone: in addition there are three shops of chimney-makers employing six men.
11	Amritsar	...	...	"Chúris" made—no details in report.
12	Siálkot	...	...	160 persons (including women and children) depend on glass work.
13	Jhelum	7	28	All the work done in the village of Sultánpur.
14	Ráwalpindi	29	83	Glass work in Baigan village, Tahsíl Gujar Khan.
15	Pesháwar	...	...	Greater part of work in one man's hands. He makes other articles in addition to "chúris," but only occasionally.
16	Dera Ismail Khan.	4	24	.....
17	Dera Gházi Khan	9	31	.....

The statistics given are incomplete, but they show that the number of persons employed in "chúri" making is very limited, and probably not more than 700 or 800.

**64. Factories.**—Except in Rohtak, where two factories apparently employ 15 hands apiece, there are no factories employing more than 10 hands. But co-operation is the rule in the industry. The fuel used in the furnace is wood, and a large amount is required, while it takes no more to melt the "kánch" for several working together than for one man. Hence the industry exists only in towns and large villages, the average number working at one furnace, being 5, who are either partners or workmen paid by the furnace-owner. The furnace, as described above, is built with several openings to accommodate several workers at one time, and if a man works by himself without help, he does so in a very rough way, using a grain parcher's oven instead of a regular furnace.

**65. Employment of women and children.**—Women and children are never employed in glass manufacture in any capacity whatever. But women are often connected with the distribution of the manufactured goods, for they frequently buy them to retail in the "zanánás."

**66. Retail sellers and price of "churis."**—“Chúrigars” sell their plain “chúris” to retail dealers—chiefly “Maniárs” or “Bangiárs” who ornament them and take them into the villages for sale. The “Maniár” gives 8 to 10 annas per 1,000 for plain “chúris,” and spends 12 to 15 annas in ornamenting them. He then sells them by the “jora” or set of 36, or by the hundred or dozen. Sets, if plain, cost 2 or 3 pies, and 1 or 2 annas if decorated, but the price, of course, varies with the quality of the goods; plain “jorás” sometimes sell for 2 annas and decorated “jorás” at 4 or 5 annas, while if the ornamentation is done very well, a pair of “chúris” may cost from 1 to 4 annas. On the whole, the hawker’s profit appears to be about 4 annas per rupee.

**67. Method of ornamenting “churis.”**—“Chúris” are usually ornamented by heating them over a charcoal fire and coating them with lac. “Shingraf” is used for red and charcoal for black, and the color is powdered over the lac and adheres to it. Sometimes sticks of the adhesive matter mixed with the colouring matter are made up, and applied to the “chúris” after heating. “Poth” (beads) “mina” (scraps of coloured glass) and tin foil may be stuck on after the lac and colour have been applied.

A way of ornamenting “chúris,” which is sometimes followed, is to lay on a coat of sealing wax, and cover this with gold or silver foil—which is then brought out in relief by means of dies or “thappás” of different designs.

**68. “Churigars” caste, &c.**—“Kánch” bangles are usually known as “chúris,” but in Mooltan and some other districts they are called “vang.” The bangle-maker is always a Mussalmán (Hindús are mentioned in the Umballa report only), and according to the local name for bangles, he is called either “chúrigar” or “yangrigar.” It appears that he occasionally is not paid for “chúris” supplied to a girl before marriage, but at the marriage gets about 1 rupee 4 annas and a suit of clothes. This method of payment seems to show that the “chúrigar” is looked on as a sort of “sepi,” but it is very uncommon. “Maniárs” or “Bangiárs” and “Kachers” are found as “chúri” makers, but the former are rather retailers of goods obtained from “chúrigars.” When the demand is slack—as in Kángra—the “chúrigar” is not able to live entirely by his trade and has to resort to agriculture or some other means of support. But in the Punjab plains the demand is large and not likely to fall off; the only thing the “chúrigar” has to fear is the competition of cheaper and better goods imported from the North-West Provinces, but as long as he has a good connection with the “Maniárs,” he is kept fully employed at his trade.

**69. Customs relating to “churis.”**—“Chúris” are worn both by Hindú and Muhammadan women. Among the latter they are always worn by a bride on marriage. In the North-West Provinces all Hindús—except “Sarsut Brahmans” and “Khatriis”—wear “chúris,” and regard them as semi-sacred objects, for if one should accidentally break, its pieces must be collected and kissed three times, and every Hindú woman wears “kánch” bangles till her

husband's death and she then breaks them with a brick or stone, and puts on gold or silver bangles in their place—the wearing of bangles not of "kánch" being the mark either of a widow or of a prostitute.

**70. Conditions and prospects of "churi" industry.**—These customs are not so strictly observed in the Punjab, but even so the "chúri" is much worn, for it is a cheap and gaudy ornament, within the reach of the poorest and appreciated by the natives. It is not, however, probable that the manufacture will extend in the Punjab, unless large factories are established where saving in cost can be combined with an increase of quality, for the North-West Provinces manufacturers are able to undersell the local "chúrigars," and supply a better class of goods, which are readily bought. The local makers cannot compete against the importers by reducing their prices as they have to contend also against a rise in the cost of manufacture. "Sajji," most commonly used for making "kánch," has risen in price from 12 annas to 3 or 4 Rs. per maund, and wood is getting dearer than before, while the smallness of the factories offer no facilities for the introduction of appliances to economise labour and expense.

**71. Trade in "churis."**—The statistics given of the amount of import and export for districts where "chúris" are made are very imperfect; for districts where they are not made, no reference is made to any import. Local demand, however, does not depend simply on local supply, for the fashion of wearing "chúris" is widespread and capable of being gratified very cheaply, besides having some degree of religious or social meaning, and when we find that Rohtak spends Rs. 18,000 annually on them, while about Rs. 5,000 per annum is spent in Mooltan and Rs. 4,000 in Dera Gházi Khan, it is certain that there must be a large import into districts where "chúris" are not made. But the reports make no mention of any import, and no idea can be formed of the annual value of the "chúris" that are made in and come into the Punjab. It is, however, clear that large quantities come in from the North-West Provinces, especially from Meerut, and there is also a small import from the villages of Sanjuan and Bhimbar in Jammu, whence "chúris" to the annual value of Rs. 1,000 are imported into Siálkot.

Delhi, Lahore and Mooltan would appear to be the chief centres of inter-district trade, and there is also some export from Panipat. Kángra sends "chúris" worth about Rs. 1,000 per annum into the neighbouring Hill States.

**72. Manufacture of glass articles other than "churis."**—The manufacture of articles other than "chúris" is carried on in six districts only viz., Karnál, Kángra, Lahore, Pesháwar, Hoshiárpur and Delhi. Except in Lahore it does not exist as separate from "chúri" making, but in Lahore there are three shops of chimney-makers (chimney *sáz*) employing six men.

Looking-glasses are made in Delhi, and the Shalípur report mentions that they are repaired at Bhera. Looking-glasses are made as described in "Punjab Manufactures," but I am unable to give any statistics as to the trade.

The "kánch" used for bottles, &c., the composition of which has been already mentioned is either blown or moulded. Bottles are blown inside a mould which gives them the correct shape, and the mouths of bottles and chimneys are opened out, while the glass is hot, by the use of a pair of compasses. Moulds are used for glasses, cups, "garwas," &c., such as those made at Dasúya in Hoshiárpur. The articles usually made are glasses, dishes, phials for attar and scent, beads and pieces of colored glass, and "chorpánís" or shíshís. The "shíshí" is a popular toy, and consists of a glass tube terminating at each end in a bulb and enclosing a small quantity of water. The tube is narrowed in the centre by a ring of thread and the slow procession of air bubbles that ensues on reversing the tube is the point and interest of the toy," (Karnál Gazetteer). "Kum-kuma" or silvered globes are made at Pánipat and in Kángra. The method of silvering the glass with a mixture of lead, tin and mercury is described in "Punjab Manufactures," II—238. These silvered-globes are broken up, and the pieces are used as mirrors in "ársís" or spangles on cloth, but English globes are now imported and are preferred to those made here. "Huqqa" bottoms are made in Kángra for about 8 annas apiece.

**73. Prices and profit.**—The prices of all articles vary greatly in the different districts, but the cheapest glass work is made in Pesháwar; "chorpánis, for instance, sell there for 5 annas per dozen, while they cost Re. 1 2 annas per dozen in Kángra. The profit on bottles, &c., is the same as on "chúris" and is not separate from it, as bottle-makers are all "churígárs" as well. The profits of a "chimney-sáz" at Lahore are about 4 annas per diem; two workmen can turn out 2 or 2½ dozen chimneys in one day, and a dozen chimneys cost about Re. 1-13 annas to make, and sell for Rs. 2.

The best glass in the province is made at Pánipat; the glass there is of very good quality, and sells for Rs. 10 per maund. The factory employs only one skilled workman, who is paid 12 annas per maund of glass made, and is assisted by 3 or 4 men at 3 annas per day. 100 maunds of glass can be made in 25 days for Rs. 864, (the most important item in the cost being Rs. 500 for 2,000 maunds of wood), and sells for Rs. 1,000, but as the work is at a standstill during the 4 months of the rains, the average profit of the glassmaker is reckoned at Rs. 100 per mensem, while the skilled workman gets an average during the year of Rs. 50 per mensem.

**74.—Trade in glass-ware.**—Very few details of import and export are given in the reports. The Jullundur report is the only one that gives a complete estimate, and from that it appears that Jullundur annually imports from Delhi bottles worth Rs. 1,860, chimneys worth Rs. 1,708, looking-glass, and panes worth Rs. 1,881, and miscellaneous articles worth Rs. 1,512, while from Lahore it imports Rs. 600 worth, of which Rs. 100 worth are buttons. Lahore last year imported Rs. 16,230 worth of glass; the place whence imported is not stated and the total import is said to have been used locally, but the glass was probably European, and a great portion of it must have been distributed over the province. The import into Delhi is perhaps greater than that into Lahore, for the figures for Jullundur would seem to show that Delhi is the chief centre of the glass trade, but no import or export is mentioned in the report.

**75. Prospects of Punjab Glass Manufactures.**—While rough articles are good enough to suit the purposes for which the natives require them, large and small bottles will be in demand till European goods become cheaper, but the articles made here are not of a character to compete with imported goods. The manufacture of glass can only be effectively and economically carried on, on a large and permanent scale, for the cost of fuel is one of the largest items of expense, and this can be reduced only by the erection of proper furnaces. The small scale on which the industry exists in the Punjab, and the import of good and cheap ware, render any advance in the character or extent of the local industry unlikely, and unless vitality is imported to it by the foundation of large works (of which there is no prospect) glass-making will continue to exist as one of the unimportant industries of the province, for as long as there is a demand for such peculiarly native articles as the "chúri" and the "chorpáni" there is no fear of its extinction.

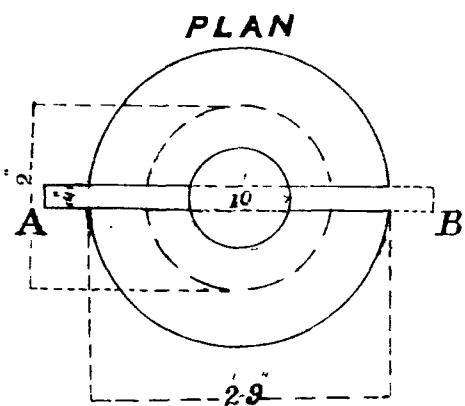
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C. J. HALLIFAX, C.S.,

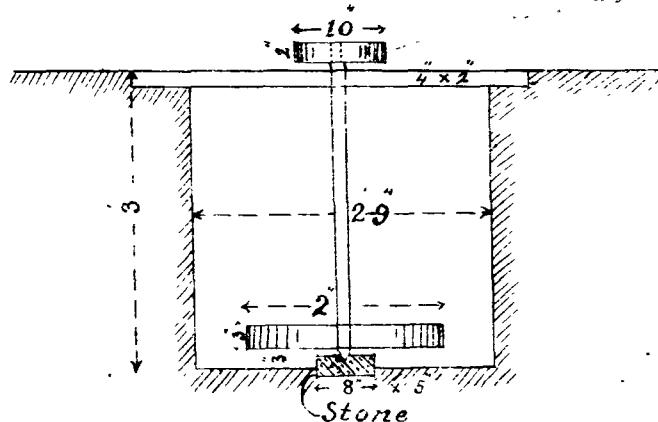
Dated 8th February 1892.

Counsellor to His Highness the Rája of Suket.

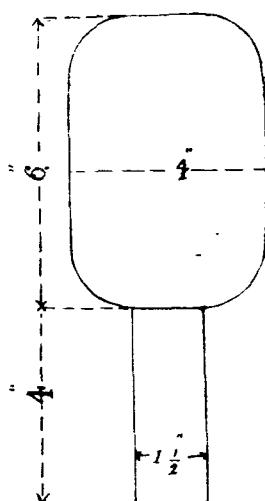
PLATE I.



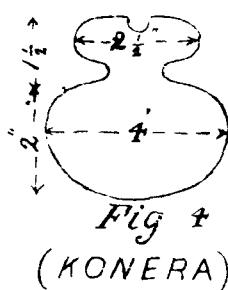
Section on A.B



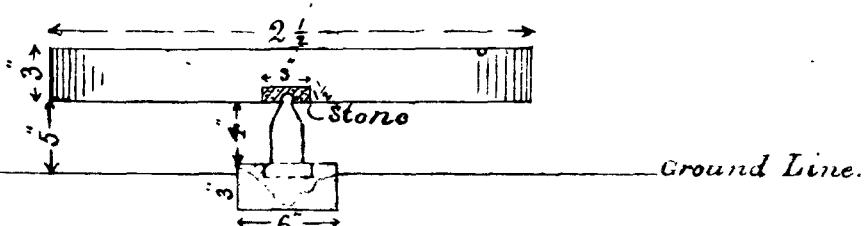
**Fig. 1**  
(CHÁK LAKRI)



**Fig. 3.**  
(THA TWA)



**Fig. 4**  
(KONERA)



**Fig. 2.**  
(RÁM CHÁK)

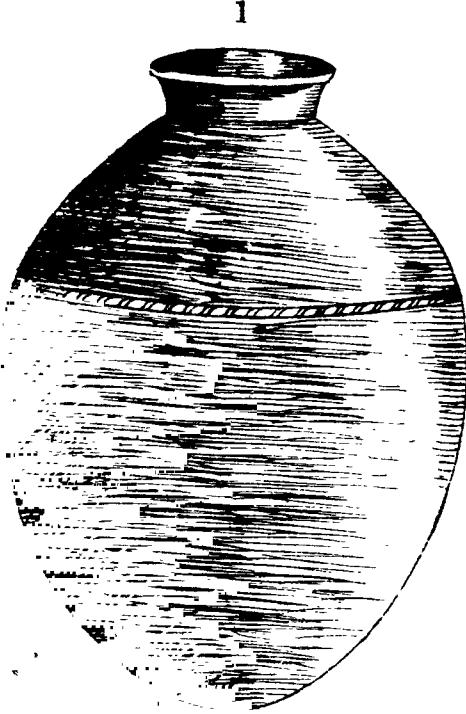
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Scale 3 inches = one foot.

Scale one inch = one foot for Section.



PLATE II.



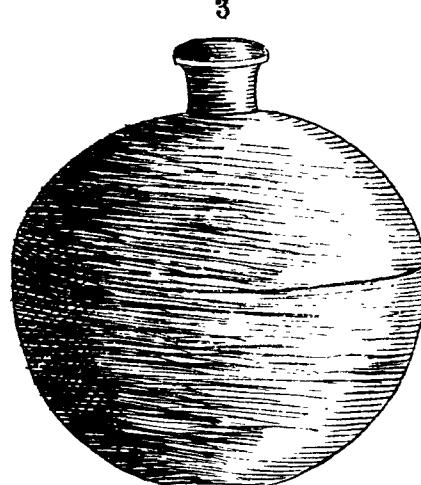
Mattan.

मटन (matan).



Chati

चाटी (cāti).



Ghera

घडा (ghadā).



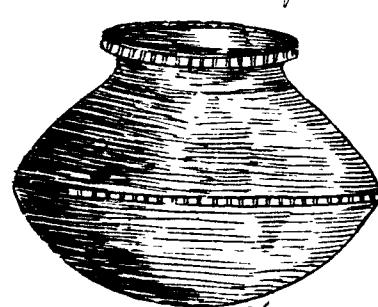
Sorahi

सोराही (sorāhī)



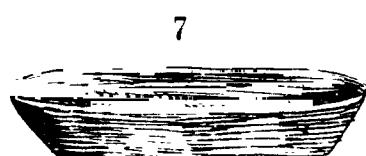
Lotá

लोटा (lotā).



Handi

हंडी (handī)



Tabag

8



Rakabi

रकाबी (rakābī)



Piála



Martabán



Dohná

पिल्ला

(piyālā)

मरतबान

(markabān)

दोहना

(dohnā)

1000

815.1

163

1000 815.1

PLATE III.

12



*Maghi*

ਮਾਡੀ (maghi)

13



*Kullar*

ਕੁਲਾਡੀ (kullad)

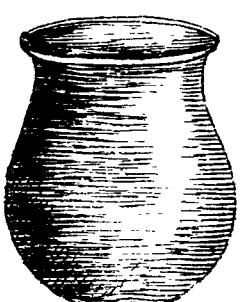
14



*Thuthi*

ਥੂਠੀ (thuthi)

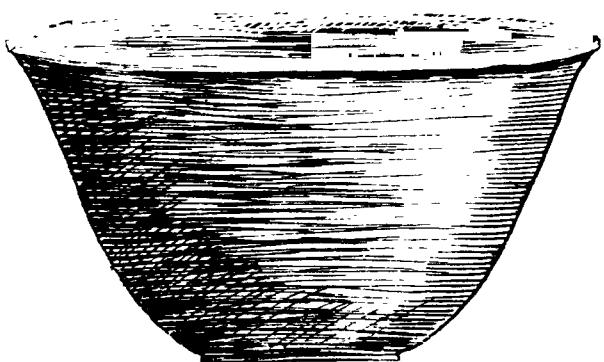
15



*Tind*

ਤਿੰਦ (tind)

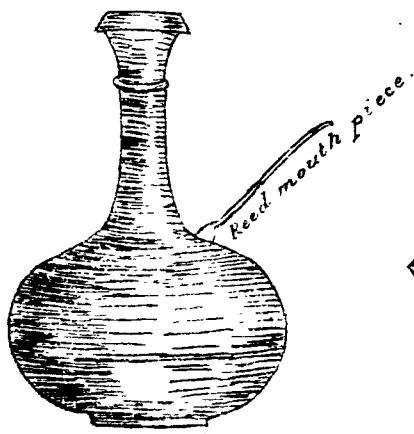
16



*Nānd*

ਨਾਂਦ (nānd)

17



*Hukkā*

20



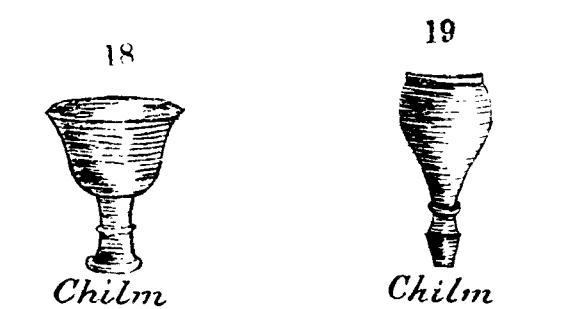
*Diwa*

ਦੀਵਾ (diwa)

18



*Chilm*



19



*Chilm*

21



*Dawāt*

ਦਵਾਤ (dawāt)

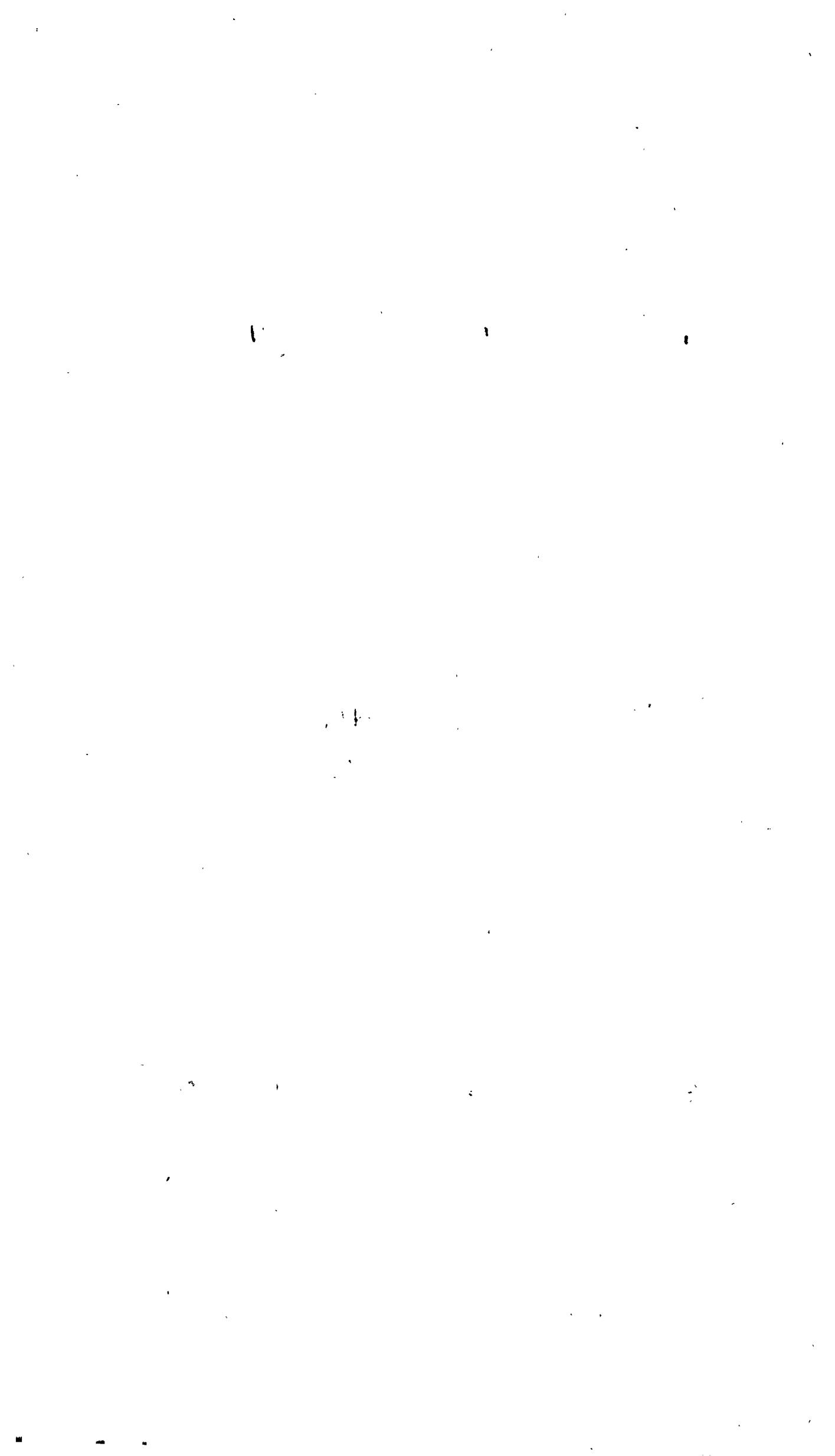
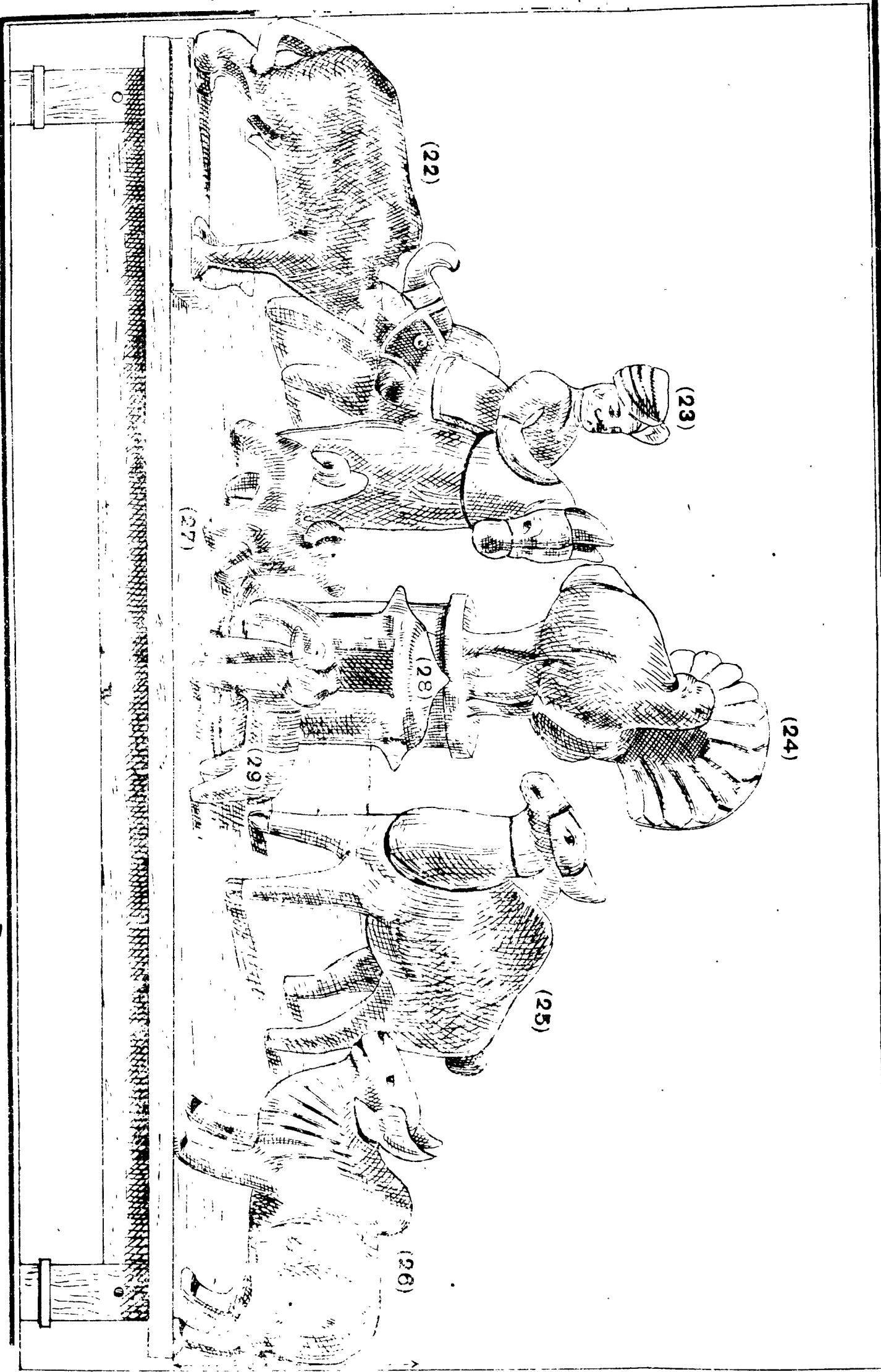


PLATE IV.



(22) BHAINSI (BUFFALO)

भैंसि

(23) GHORA (HORSE)

घोड़ा

(24) KABUTAR (PIGEON)

कबुतर

(25) UNTH (CAMEL)

उंठ

(26) BALD (BULL)

बल्द

(28) DOLA (DOLLS' HOUSE)

दूली

(27) KUTTA (DOG)

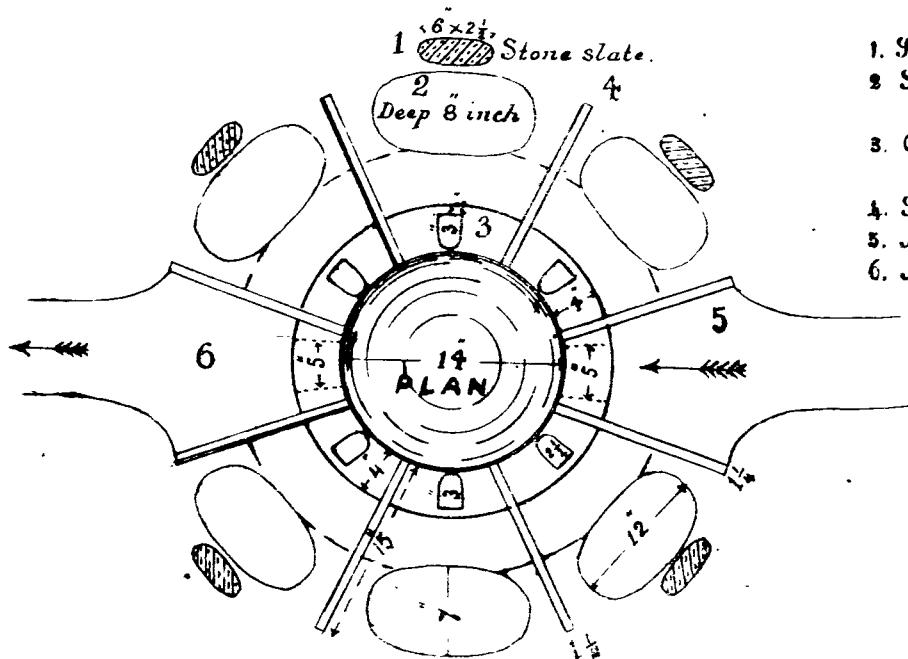
कुत्ता

(29) HATHI (ELEPHANT)

हथी



# PLATE V.



Scale 2 inches = one foot  
for Kundis & Sikhs

Fig. 2.



Fig. 3.

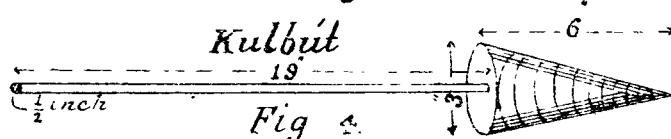


Fig. 4.

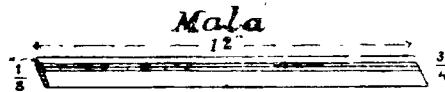


Fig. 5.

Sikh or Iron bar

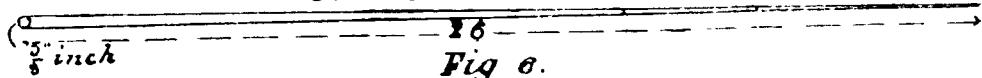


Fig. 6.

Traklah

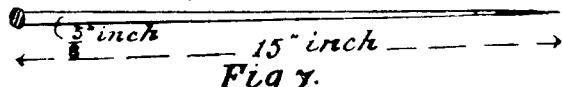
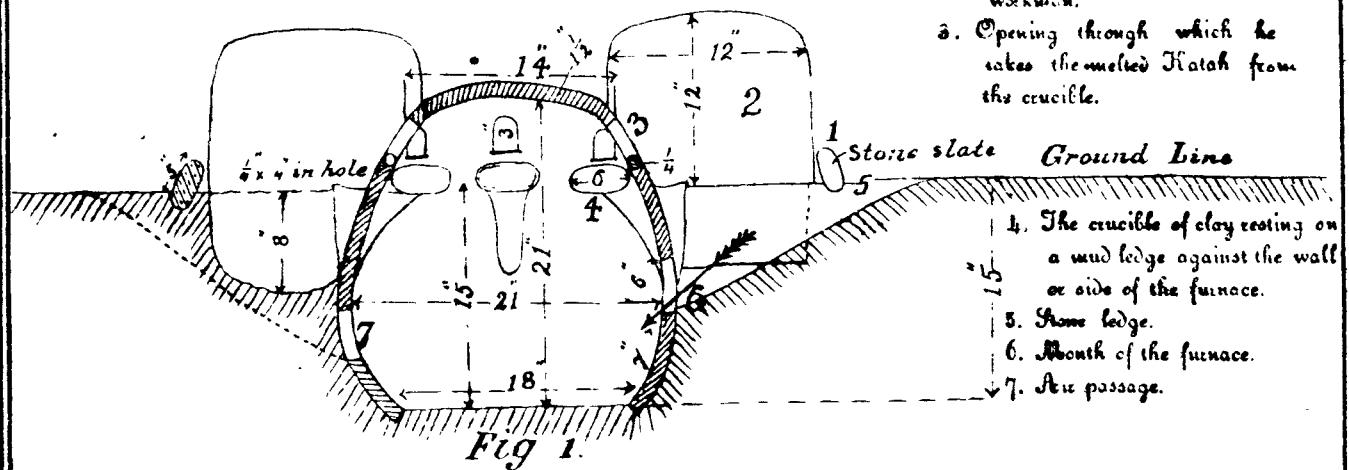


Fig. 7.

Cross Section



1. Place where the workmen sit.  
2. Green wall dividing off each workman.

3. Opening through which he takes the melted Hatch from the crucible.

- 4. The crucible of clay resting on a mud ledge against the wall or side of the furnace.
- 5. Stone ledge.
- 6. Mouth of the furnace.
- 7. Air passage.

Mr. Col.  
3/10/15

Central Archaeological Library,

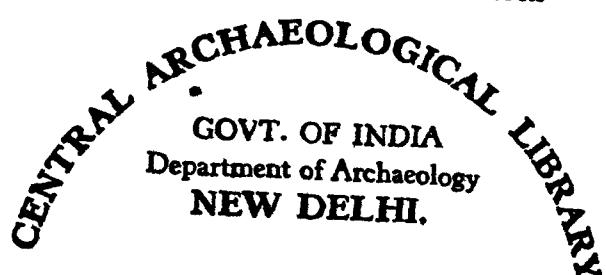
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